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HELLENIC SOCIETY OF NEPHROLOGY

MEETING & SEMINAR

Combined with:

18th BANTAO CONGRESS

HELLENIC SOCIETY OF NEPHROLOGY 1970

BANTAO

October 19-22, 2023

Makedonia Palace Hotel

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UNDER THE AUSPICES OF

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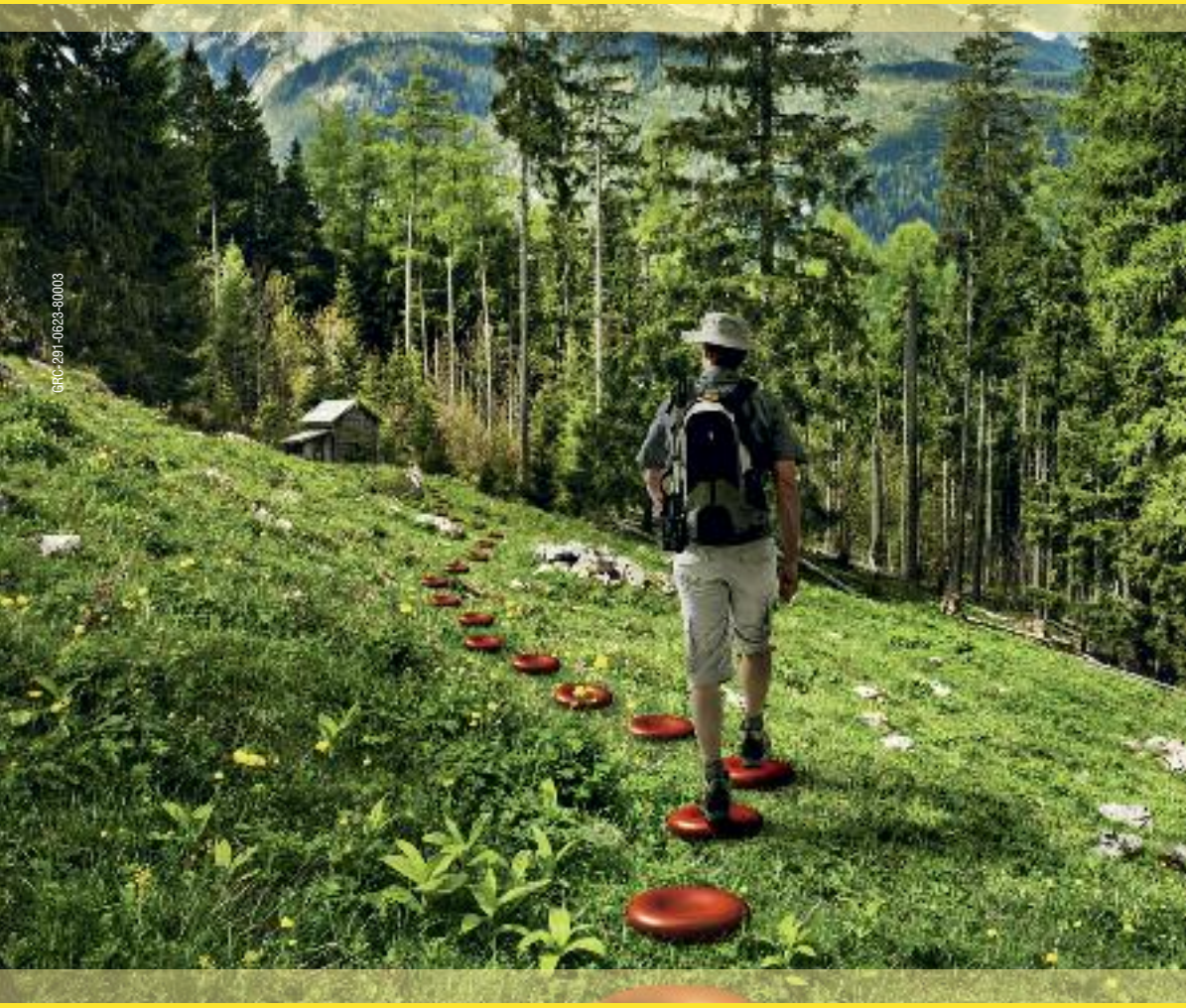

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ΚΑΤΟΧΟΣ ΤΗΣ ΑΔΕΙΑΣ ΚΥΚΛΟΦΟΡΙΑΣ: Boehringer Ingelheim International GmbH, Binger Str. 173, D-55216 Ingelheim am Rhein, Γερμανία. **ΑΡΙΘΜΟΣ(ΟΙ) ΑΔΕΙΑΣ ΚΥΚΛΟΦΟΡΙΑΣ:** Jardiance® 10 mg επικαλυμμένα με λεπτό υμένιο δισκία: EU/1/14/930/010-018. Jardiance® 25 mg επικαλυμμένα με λεπτό υμένιο δισκία: EU/1/14/930/001-009. **ΗΜΕΡ/ΝΙΑ ΠΡΩΤΗΣ ΕΓΚΡΙΣΗΣ:** 22 Μαΐου 2014, **ΗΜΕΡ/ΝΙΑ ΑΝΑΝΕΩΣΗΣ ΤΗΣ ΑΔΕΙΑΣ:** 14 Φεβρουαρίου 2019. **ΗΜΕΡΟΜΗΝΙΑ ΑΝΑΘΕΩΡΗΣΗΣ ΤΟΥ ΚΕΙΜΕΝΟΥ:** 24 Ιουλίου 2023. **ΤΙΜΕΣ: Τιμές Ελλάδας:** Jardiance® 10 mg επικαλυμμένα με λεπτό υμένιο δισκία: **Χ.Τ.:** 34,97€, **Ν.Τ.:** 30,43€, **Λ.Τ.:** 48,19€. Jardiance® 25 mg επικαλυμμένα με λεπτό υμένιο δισκία: **Χ.Τ.:** 34,97€, **Ν.Τ.:** 30,43€, **Λ.Τ.:** 48,19€. **Τιμές Κύπρου:** Jardiance® 10 mg επικαλυμμένα με λεπτό υμένιο δισκία: **Λ.Τ. (ΜΕΓΙΣΤΗ ΔΥΝΑΤΗ):** 54,63€. Jardiance® 25 mg επικαλυμμένα με λεπτό υμένιο δισκία: **Λ.Τ. (ΜΕΓΙΣΤΗ ΔΥΝΑΤΗ):** 55,40€. **ΧΟΡΗΓΕΙΤΑΙ ΜΕ ΙΑΤΡΙΚΗ ΣΥΝΤΑΓΗ.**

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Welcome Letter

Dear Friends and Colleagues,

The Balkan peninsula is a place with long standing history, and centuries of interaction of civilizations, religions and mostly people. Balkans in the modern era are a paradigm of diversity, inclusion, friendship, and progress. Especially in the field of Medicine, sharing of knowledge and collaboration between experts are essential towards our continuous struggle for advancements in the care and wellbeing of our patients.

It is, therefore, my great pleasure to invite all nephrologists who live in the Balkans to attend the ***18th BANTAO (Balkan Cities Association of Nephrology, Dialysis, Transplantation and Artificial Organs) Congress*** *which will be held in Thessaloniki, in October 19-22, 2023.*

We will have the chance to discuss new developments, current guidelines, bright ideas and future perspectives in the field of Nephrology. Many distinguished speakers from all over the Balkans, as well as well renowned experts from all over Europe will take part in this event sharing knowledge and experience. We will also have the opportunity to meet, interact with each other, work together and plan new partnerships.

Thessaloniki, the host city of the Congress, is and has also been a crossroad of civilizations, nations, and cultures. It is a very attractive lively and modern city with many places of archeological, historical, and cultural interest, expressing the true Balkan spirit.

Vassilios Liakopoulos, MD, PhD, FISN
Professor of Nephrology
President of the 18th BANTAO Congress

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Volis Nikolaos Vasileios
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General Information

Venue

Makedonia Palace Hotel, www.makedoniapalace.com

Dates

19-22 October 2023

Official language

The official language of the 18th BANTAO Congress is English

CME Accreditation

The Congress will be accredited with 25 CME credits by the National Medical Association.

Certificate of Attendance

In order to obtain CME credits you must complete 60% participation of the scientific program. The certificates will be send by the end of the Congress and as soon as the evaluation form will be submitted to the Congress Secretariat.

Presentations

Available audiovisual equipment for all presentations will be through power point presentation. For power point point presentations, your presence to the "technical reception desk" is required one hour prior to the time of your presentation in order to check the compatibility of your usb stick. Use of personal computers will not be permitted.

Exhibition

Within the Congress area there will be an exhibition of medical equipment and pharmaceutical products.

Registration

Type of Registration	Fees
Specialists	140€
Residents	120€
Nurses	50€
Students	0€

VAT 24% is not included

Accommodation

HOTEL	SINGLE ROOM (per night)
MAKEDONIA PALACE	150 €

ΕΜΒΟΛΙΑΣΤΕ ΤΩΡΑ ΠΡΟΣΦΕΡΟΝΤΑΣ ΠΡΟΣΤΑΣΙΑ ΠΟΥ ΔΙΑΡΚΕΙ[1*]

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Σε ενήλικες ηλικίας 50 ετών και άνω οι πιο συχνά αναφερόμενες ανεπιθύμητες ενέργειες ήταν άλγος στη θέση ένεσης (68,1% συνολικά/δόση, 3,8% σοβαρού βαθμού/δόση), μυαλγία (32,9% συνολικά/δόση, 2,9% σοβαρού βαθμού/δόση), κόπωση (32,2% συνολικά/δόση, 3,0 % σοβαρού βαθμού/δόση) και κεφαλαλγία (26,3% συνολικά/δόση, 1,9% σοβαρού βαθμού/δόση). Οι περισσότερες από αυτές τις ανεπιθύμητες ενέργειες δεν ήταν μεγάλης διάρκειας (διάμεση διάρκεια 2 έως 3 ημέρες). Η διάρκεια των ανεπιθύμητων ενεργειών που αναφέρθηκαν ως σοβαρές ήταν 1 έως 2 ημέρες. Σε ενήλικες ηλικίας ≥18 ετών που έχουν ανοσοανεπάρκεια ή βρίσκονται σε ανοσοκαταστολή λόγω νόσου ή θεραπείας (αναφέρονται ως ανοσοκατεσταλμένοι (IC)), το προφίλ ασφάλειας ήταν σε συμφωνία με εκείνο που παρατηρήθηκε σε ενήλικες ηλικίας 50 ετών και άνω. Υπάρχουν περιορισμένα δεδομένα σε ενήλικες ηλικίας 18-49 ετών με αυξημένο κίνδυνο HZ που δεν είναι IC. Συνολικά, υπήρξε υψηλότερη συχνότητα εμφάνισης κάποιων ανεπιθύμητων ενεργειών σε νεότερες ηλικιακές ομάδες:

- μελέτες σε IC ενήλικες ηλικίας ≥18 ετών (συγκεντρωτική ανάλυση): η συχνότητα εμφάνισης πόνου στο σημείο της ένεσης, κόπωσης, μυαλγίας, κεφαλαλγίας, ρίγους και πυρετού ήταν υψηλότερη σε ενήλικες ηλικίας 18-49 ετών σε σύγκριση με αυτούς ηλικίας 50 ετών και άνω .
- μελέτες σε ενήλικες ηλικίας ≥50 ετών (συγκεντρωτική ανάλυση): η συχνότητα εμφάνισης μυαλγίας, κόπωσης, κεφαλαλγίας, ρίγους, πυρετού και γαστρεντερικών συμπτωμάτων ήταν υψηλότερη σε ενήλικες ηλικίας 50-69 ετών σε σύγκριση με αυτούς ηλικίας 70 ετών και άνω.

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Βιβλιογραφία : 1. SHINGRIX, Περίληψη των Χαρακτηριστικών του Προϊόντος, Δεκέμβριος 2022.

Λ.Τ.: 165,86 €.

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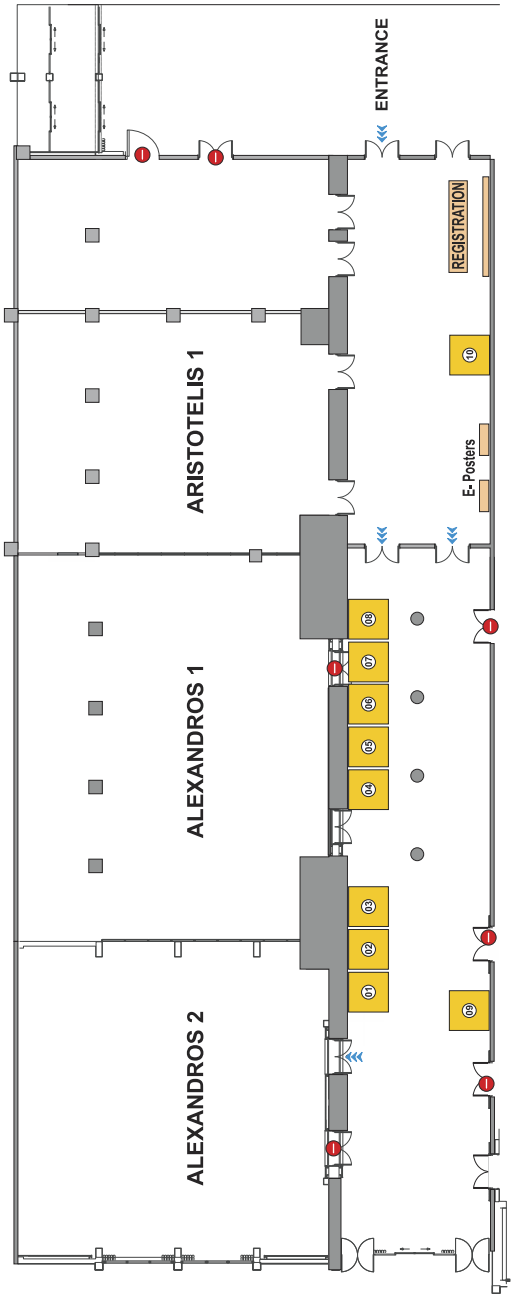

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18th BANTAO CONGRESS

SCIENTIFIC PROGRAM

2023

Hall Alexandros I | Thursday, October 19th

14:30-15:30 | ORAL PRESENTATIONS: CKD

F. Christidou, G. Antoniadi

O01 **POTENTIAL PREDICTORS OF DIABETIC NEPHROPATHY IN PATIENTS WITH TYPE 2 DIABETES MELLITUS**

S. Ilieva[1], E. Naseva[2], L. Lozanov[1]

[1]*Clinic of Internal Diseases, Acibadem CityClinic University Hospital Tokuda, Sofia, Bulgaria*

[2]*Faculty of Public Health "Prof. Tsekomir Vodenicharov, MD, DSc", Medical University of Sofia, Bulgaria*

O02 **ASSOCIATION BETWEEN VISFATIN AND CHRONIC KIDNEY DISEASE**

P. Petrov, S. Staykova

Clinic of Nephrology, University Hospital St. Marina Varna, Bulgaria

O03 **EFFECTS OF SODIUM-GLUCOSE CO-TRANSPORTER 2 INHIBITORS ON CARDIOVASCULAR MORTALITY IN CHRONIC KIDNEY DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS**

E. Pella[1], M.E. Alexandrou[1], M. Theodorakopoulou[1], A. Tsitouridis[1], F. Iatridi[1], A. Karagiannidis[1], D. Faitatzidou[1], E. Sampani[1], V. Kamperidis[2], A. Papagianni[1], P. Sarafidis[1]

[1]*First Department of Nephrology, Hippokration Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece*

[2]*First Department of Cardiology, AHEPA Hospital, Athens, Greece*

O04 **EFFECTS OF SODIUM-GLUCOSE CO-TRANSPORTER 2 INHIBITORS ON HEART FAILURE IN CHRONIC KIDNEY DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS**

M. Theodorakopoulou[1], M.E. Alexandrou[1], E. Pella[1], F. Iatridi[1], A. Tsitouridis[1], V. Kamperidis[2], E. Sampani[1], E. Karkamani[1], A. Xanthopoulos[3], A. Papagianni[1], P. Sarafidis[1]

[1]*First Department of Nephrology, Hippokration Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece*

[2]*First Department of Cardiology, AHEPA Hospital, Athens, Greece*

[3]*Cardiology Department, University of Thessaly, Larissa, Greece*

O05 **ANEMIA MANAGEMENT AND MAGNESIUM IN ADVANCED CKD PATIENTS**

A. Karanfilovikj[1], S. Sulejman[1], A. Canevska Taneska[1], M. Milenkova Bogojevska[1], A. Spasovska Vasilova[1], Z. Shterjova Markovska[1], J. Usprcov[1], V. Karanfilovski[1], A. Stojanoska Severova[1], A. Memeti[1], Z. Janevski[1], S. Filipovski[1], B. Bedzeti[1]

[1]*University Department of Nephrology, University "Ss Cyril and Methodius" Medical Faculty, Skopje, Republic of North Macedonia*

Hall Alexandros I | Thursday, October 19th

O06 **SOME RELATIONSHIPS BETWEEN ZINC DEFICIENCY AND CHRONIC KIDNEY DISEASES (CKD)**

D. Yonova[1], V. Dimitrova[1], D. Arabadjieva[1], N. Velkova[1], V. Manolov[2], I. Trendafilov[2], V. Papazov[2], V. Vasilev[3], I. Popov[4], D. Ilcheva[4], D. Ahmedov[4]

[1]Sofia University Hospital "Lozenetc", Bulgaria

[2]Med. University, Sofia, Bulgaria

[3]Private Clin. Lab."Ramus", Sofia, Bulgaria

[4]Nephrol.Dial.Clinic, University Hospital, St. Zagora, Bulgaria

O07 **GFR SLOPE AS A PREDICTOR OF KIDNEY FUNCTION RELATED TO ANTHROPOMETRIC PARAMETERS**

V. Godanci Kelmendi[1], M. Ramadani Piraj[1], S. Konjufca[2], F. Ymeri[2]

[1]University Clinical Centre of Kosova, Nephrology Clinic, Albania

[2]Asklepi Med Ambulance for Internal Medicine – Nephrology, Albania

O08 **IDENTIFYING INDIVIDUALS AT RISK OF NEEDING CKD ASSOCIATED MEDICATIONS IN A EUROPEAN KIDNEY DISEASE COHORT**

E. Stamellou[1,2], T. Saritas[1], M. Froissart[3], F. Kronenberg[4], P. Sternvinkel[5], D.C. Wheeler[6], K.-U. Eckardt[7], J. Floege[1], J. Fotheringham[8,9]

[1]Department of Nephrology, RWTH University of Aachen, Aachen, Germany

[2]Department of Nephrology, University Hospital of Ioannina, Ioannina, Greece

[3]Centre de Recherche Clinique (CRC), Lausanne University Hospital, Lausanne, Switzerland

[4]Department of Genetics, Institute of Genetic Epidemiology, Medical University of Innsbruck, Innsbruck, Austria

[5]Division of Renal Medicine, Department of Clinical Science, Intervention and Technology, Karolinska Institutet, Stockholm, Sweden

[6]Department of Renal Medicine, University College London, London, UK.

[7]Department of Nephrology and Medical Intensive Care, Charité-Universitätsmedizin Berlin, Berlin, Germany

[8]Northern General Hospital, Sheffield Kidney Institute, Herries Road, Sheffield, South Yorkshire, S5 7AU, UK

[9]School of Health and Related Research, University of Sheffield, Sheffield, UK

Hall Alexandros I | Thursday, October 19th

15:30-16:30 | ORAL PRESENTATIONS: TRANSPLANTATION

Chairs: **K. Leivaditis, I. Tsouchnikas**

O09 **RESPONSE TO TOZINAMERAN VACCINATION IN RENAL TRANSPLANT RECIPIENTS IS ASSOCIATED WITH A DISTINCT INITIAL PROFILE OF IMMUNITY CELLS AND WITH CERTAIN ALTERATIONS IN THEIR SUBPOPULATIONS**

S. Stai[1,2], A. Fylaktou[3], E. Kasimatis[1,2], A. Xochelli[3], G. Lioulios[1,2], V. Nikolaidou[3], A. Papadopoulou[4], G. Myserlis[1,5], A.M. Iosifidou[1], M.A. Iosifidou[1], A. Papagianni[1,2], E. Yannaki[4], G. Tsoulfas[1,5], M. Stangou[1,2]

[1]School of Medicine, Aristotle University of Thessaloniki, Thessaloniki, Greece

[2]1st Department of Nephrology, Hippokration Hospital, Thessaloniki, Greece

[3]Department of Immunology, National Histocompatibility Center, Hippokration General Hospital, Thessaloniki, Greece

[4]Hematology Department- Hematopoietic Cell Transplantation Unit, Gene and Cell Therapy Center, "George Papanikolaou" Hospital, Thessaloniki, Greece

[5]Department of Transplant Surgery, Hippokration General Hospital, Thessaloniki, Greece

O10 **IS OBESITY BECOMING ROUGH CAUSE MOMENTUM IN KIDNEY DONORS MORTALITY?**

S. Filipovski, L. Trajceska, I. Rambabova Busljetikj, G. Severova, I. Nikolov, Z. Shterjova, S. Sulejman, Al. Taneska, M. Milenkova, V. Pusevski, N. Gjorgjijoski, G. Spasovski

P.H.I. University Clinic for Nephrology – Skopje, North Macedonia

O11 **PULSE WAVE VELOCITY AND RENAL RESISTIVE INDEX IN KIDNEY TRANSPLANTED PATIENTS-OUR EXPERIENCES**

S. Pavleska Kuzmanoska[1], Z. Janevski[1], N. Gjorgijevski[1], B. Gerasimovska[1], M. Angelovska[2], M. Dimovska[3], I. Vujicik Ivo[5], H. Minovska[6], N. Ivanovski[1], A. Vasilova[1], S. Tasevska Bogoeva[4]

[1]University Clinic of Nephrology, Skopje, N. Macedonia

[2]Phi Health Center Kratovo, Kratovo, N. Macedonia

[3]Institute of Public Health of The Republic of North Macedonia, Skopje, N. Macedonia

[4]University Clinic for Infectious Diseases and Febrile Conditions, Skopje, N. Macedonia

[5]University Clinic of Urology, Skopje, N. Macedonia

[6]Phi Clinic Hospital Bitola, Bitola, N. Macedonia

Hall Alexandros I | Thursday, October 19th

O12 **CHARACTERISTICS OF PATIENTS ON THE WAITING LIST FOR KIDNEY TRANSPLANTATION**

A. Zolota, E. Kasimatis, G. Myserlis, E. Sampani, G. Katsanos, N. Antoniadis, G. Tsakiris, A. Kofinas, S. Vasileiadoy, K.E. Karakasi, S. Neiros, G. Tsoulfas, A. Papagianni

Renal Transplant Unit, School of Medicine, Aristotle University of Thessaloniki, General Hospital "Hippokratio", Greece

O13 **LONGITUDINAL ANALYSIS OF PERIPHERAL BLOOD IMMUNE CELL SUBSETS IN KIDNEY TRANSPLANT RECIPIENTS AND CLINICAL CORRELATIONS – A PROSPECTIVE STUDY**

A. Duni[1,2], A. Kitsos[1,2], G. Markopoulos[3], V. Koutlas[2], E. Tzalavra[2], V. Tatsis[2], J. Alekos[1], L. Gkika[1], G. Baxevanos[3], H. Pappas[1,2], G. Vartholomatos[3], M. Mitsis[2], E. Dounousi[1,2]

[1]University Hospital of Ioannina, Department of Nephrology, Greece

[2]University Hospital of Ioannina, Department of Surgery and Kidney Transplant Unit, Greece

[3]University Hospital of Ioannina, Laboratory of Haematology - Unit of Molecular Biology, Greece

O14 **CIRCULATING IMMUNE CELL SUBSETS CORRELATE WITH CONVENTIONAL AND NOVEL DEFORMATION RELATED INDICES OF LEFT VENTRICULAR FUNCTION IN KIDNEY TRANSPLANT RECIPIENTS WITH NO ESTABLISHED CARDIOVASCULAR DISEASE**

A. Duni[1,2], L. Lakkas[3], G. Markopoulos[4], A. Bechlioulis[3], V. Koutlas[2], E. Tzalavra[2], V. Tatsis[2], I. Theodorou[1], H. Pappas[1,2], G. Vartholomatos[4], M. Mitsis[2], K. Naka[4], E. Dounousi[1,2]

[1]University Hospital of Ioannina, Department of Nephrology, Greece

[2]University Hospital of Ioannina, Department of Surgery and Kidney Transplant Unit, Greece

[3]Second Department of Cardiology and Michaelidion Cardiac Center, Greece

[4]University Hospital of Ioannina, Laboratory of Haematology - Unit of Molecular Biology, Greece

O15 **PATIENTS WITH DIABETIC NEPHROPATHY ON THE WAITING LIST FOR KIDNEY TRANSPLANTATION**

A. Zolota, E. Kasimatis, E. Sampani, G. Myserlis, G. Katsanos, N. Antoniadis, A. Kofinas, G. Tsakiris, S. Vasileiadou, K.E. Karakasi, S. Neiros, G. Tsoulfas, A. Papagianni

Renal Transplant Unit, School of Medicine, Aristotle University of Thessaloniki, General Hospital "Hippokratio", Greece

HALL ALEXANDROS I — THURSDAY, OCTOBER 19th

16:30-17:45 ROUND TABLE

HEART FAILURE AND CKD

Chairs: **S. Racki, A. Ziakkas**

16:30 - 16:50 Current conservative treatment of HF - CKD
P. Georgianos

16:50 - 17:10 Peritoneal ultrafiltration in the treatment of chronic HF
S. Racki

17:10 - 17:30 Ultrafiltration in HF
C. Chrysochoou

17:30 - 17:45 Discussion

17:45-18:00 COFFEE BREAK

18:00-19:00 ROUND TABLE

CKD TOPICS

Chairs: **E. Papachristou, D. Rebic**

18:00 - 18:15 CKD-MBD
M. Papasotiriou

18:15 - 18:30 Anemia in CKD
K. Kantartzi

18:30 - 18:45 Hypertensive disorders in Pregnancy and CKD
C. Dimitriadis

18:45 - 19:00 Discussion

19:00-19:30 SATELLITE LECTURE AstraZeneca

Chair: **S. Panagoutsos, A. Mavrogiannaki**

Reducing all-cause mortality as a treatment goal in all CKD patients. Feasible or not?
M. Giannopoulou

Hall Alexandros I | Thursday, October 19th

19:35-20:00 OPENING CEREMONY

20:00-20:30 OPENING LECTURE

Chairs: **I. Stefanidis, E. Dounousi**

Could incremental hemodialysis be a new standard of care?
C. Basile

20:30-22:00 WELCOME COCKTAIL

Hall Alexandros I | Friday, October 20th

8:30-10:00 | **ORAL PRESENTATIONS: GLOMERULAR DISEASES - COVID-19**

Chairs: **G. Filippidis, M. Divani**

O16 **COMPARISON BETWEEN BERDEN AND ANCA RISK SCORE CLASSIFICATION MODELS REGARDING THEIR ABILITY TO PREDICT SHORT AND LONG TERM OUTCOME OF ANCA-ASSOCIATED GLOMERULONEPHRITIS**

M. Christodoulou[1], E. Moysidou[1], G. Lioulios[1], S. Stai[1], K. Bandis[1], N. Flaris[2], C. Nikolaidou[2], A. Fylaktou[3], A. Papagianni[1], P. Sarafidis[1], M. Stangou[1]

[1]School of Medicine, Aristotle University of Thessaloniki, Department of Nephrology, Hippokration Hospital, Thessaloniki, Greece

[2]Department of Pathology, Hippokration General Hospital, Thessaloniki, Greece

[3]Department of Immunology, National Histocompatibility Center, Hippokration General Hospital, Thessaloniki, Greece

O17 **BEDSIDE MICROSCOPY FOR ADEQUACY ASSESSMENT OF NON-SURGICAL RENAL BIOPSIES**

P. Pateinakis[1], P. Kyriklidou[1], E. Manou[1], S. Panagakou[1], A. Karras[1], S. Pervana[2], D. Papadopoulou[1]

[1]Department of Nephrology and [2]Department of Pathology, General Hospital "Papageorgiou", Thessaloniki, Greece

O18 **THE EFFECT OF COVID-19 INFECTION ON ANTIBODY LEVELS IN VACCINATED PATIENTS ON HD: A CLINICAL STUDY**

M. Sofra[1], P. Tseke[2], P.E. Andronikidi[1], V. Athanasiadou[1], D. Panokostas[1], E. Grapsa[1]

[1]Aretaieion University Hospital, Nephrology Department, Athens, Greece

[2]Renal Unit, General Hospital Alexandra, University of Athens, Athens, Greece

O19 **MULTICENTER RETROSPECTIVE STUDY EVALUATING THE CLINICAL PICTURE AND OUTCOME OF THE SARS-COV2 INFECTION AMONG PATIENTS WITH GLOMERULAR DISEASES**

S. Lionaki[1], S. Marinaki[2], K. Kantartzi[3], D. Galitsiou[4], G. Moustakas[4], E. Dounousi[5], I. Bellos[2], S. Flouda[6], D. Boumpas[6], V. Liakopoulos[7], V. Vaios[7], A. Sardeli[1], P. Kalogeropoulos[1], C. Mpintas[2], P. Giannakopoulos[1], L. Gkika-Zervou[5], M. Papasotiriou[8], D. Goumenos[8], A. Venetsanopoulou[9], P. Voulgari[9], E. Andronikidi[10], K. Stylianou[11], S. Panagoutsos[3], I.N. Boletis[2]

[1]Department of Nephrology, Attikon University Hospital, National and Kapodistrian University of Athens, Greece

[2]Nephrology and Transplantation clinic, Laiko Hospital, National and Kapodistrian University of Athens, Greece

[3]Department of Nephrology, University of Thrace, Alexandroupolis, Greece

[4]Department of Nephrology, Gennimatas Hospital, Athens, Greece

[5]Department of Nephrology, University of Ioannina, Greece

[6]Rheumatology and Clinical Immunology Unit, Attikon University Hospital, National and Kapodistrian University of Athens, Greece

[7]Division of Nephrology and Hypertension, 1st Department of Internal Medicine, AHEPA Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece

[8]Department of Nephrology and Renal Transplantation, Patras University Hospital, Patras, Greece

[9]Rheumatology Department, University of Ioannina, Ioannina, Greece

[10]Department of Nephrology, Aretaieio Hospital, National and Kapodistrian University of Athens, Athens, Greece

[11]Department of Nephrology, University Hospital of Heraklion, Heraklion, Greece

O20 **CLINICAL PICTURE AND OUTCOME OF SARS-COV2 INFECTION POST VACCINATION IN PATIENTS ON CHRONIC HEMODIALYSIS**

P. Nikolopoulos, K. Drouzas, I. Tsoumpou, D. Bacharaki, A. Sardeli, D. Petrou, P. Giannakopoulos, M. Karagiannis, E. Pantzopoulou, K. Giolas, S. Lionaki

Department of Nephrology, 2nd Propaedeutic Internal Medicine, Medical School, National and Kapodistrian University of Athens, Attikon University Hospital, Athens, Greece

Hall Alexandros I | Friday, October 20th

O21 CLINICAL PRESENTATION AND OUTCOMES OF SARS-COV2 INFECTION IN PATIENTS WITH LUPUS NEPHRITIS AND ITS POTENTIAL EFFECT IN THE PROBABILITY OF RELAPSE

A. Sardeli[1], P. Giannakopoulos[1], S. Flouda[2], S. Marinaki[3], K. Kantartzi[4], P. Kriki[4], A. Venetsanopoulou[5], P. Voulgari[5], P. Kalogeropoulos[1], D. Petrou[1], S. Panagoutsos[4], I. Michelakis[3], D.T. Boumpas[2], I.N. Boletis[3], S. Lionaki[1]

[1]Department of Nephrology, 2nd Propaedeutic Internal Medicine, Medical School, National and Kapodistrian University of Athens, Attikon University Hospital, Athens, Greece

[2]Rheumatology and Clinical Immunology, Medical School, National and Kapodistrian University of Athens, Attikon University Hospital, Athens, Greece

[3]Department of Nephrology and Renal Transplantation, Medical School, National and Kapodistrian University of Athens, General Hospital of Athens Laiko, Athens, Greece

[4]Department of Nephrology, Medical School, Democritus University of Thrace, Alexandroupolis, Greece

[5]Rheumatology Clinic, Department of Internal Medicine, Medical School, University of Ioannina, Ioannina, Greece

O22 INCIDENCE OF ADVERSE EVENTS ASSOCIATED WITH SARS-COV2 VACCINATION IN PATIENTS WITH LUPUS NEPHRITIS AND ITS POTENTIAL EFFECT ON THE PROBABILITY OF DISEASE RELAPSE

A. Sardeli[1], D. Petrou[1], S. Flouda[2], S. Marinaki[3], P. Kriki[4], K. Kantartzi[4], A. Venetsanopoulou[5], P. Voulgari[5], M. Karagiannis[1], P. Kalogeropoulos[1], S. Panagoutsos[4], D. Boumpas[2], I.N. Boletis[3], S. Lionaki[1]

[1]Department of Nephrology, 2nd Propaedeutic Internal Medicine, Medical School, National and Kapodistrian University of Athens, Attikon University Hospital, Athens, Greece

[2]Rheumatology and Clinical Immunology, Medical School, National and Kapodistrian University of Athens, Attikon University Hospital, Athens, Greece

[3]Department of Nephrology and Renal Transplantation, Medical School, National and Kapodistrian University of Athens, General Hospital of Athens Laiko, Athens, Greece

[4]Department of Nephrology, Medical School, Democritus University of Thrace, Alexandroupolis, Greece

[5]Rheumatology Clinic, Department of Internal Medicine, Medical School, University of Ioannina, Ioannina, Greece

O23 FREQUENCY OF ADVERSE EVENTS ASSOCIATED WITH THE SARS-COV2 VACCINATION AMONG PATIENTS WITH GLOMERULAR DISEASES

S. Lionaki[1], P. Kriki[2], S. Marinaki[3], D. Galitsiou[4], E. Dounousi[5], S. Flouda[6], I. Bellos[3], V. Liakopoulos[7], V. Vaios[7], A. Sardeli[1], Z. Kleinaki[3], D. Petrou[1], P. Kalogeropoulos[1], L. Gkika-Zervou[5], M. Papasotiriou[8], D. Goumenos[8], A. Venetsanopoulou[9], P. Voulgari[9], E. Grapsa[10], K. Stylianou[11], S. Panagoutsos[2], I.N. Boletis[3]

[1]Department of Nephrology, 2nd Propaedeutic Internal Medicine, Attikon University Hospital, National and Kapodistrian University of Athens, Greece

[2]Department of Nephrology, University of Thrace, Alexandroupolis, Greece

[3]Nephrology and Transplantation Clinic, Laiko Hospital, National and Kapodistrian University of Athens, Greece

[4]Department of Nephrology, Gennimatas Hospital, Athens, Greece

[5]Department of Nephrology, University of Ioannina, Greece

[6]Rheumatology and clinical immunology Unit, Attikon University Hospital, National and Kapodistrian University of Athens, Greece

[7]Division of Nephrology and Hypertension, 1st Department of Internal Medicine, AHEPA Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece

[8]Department of Nephrology and Renal Transplantation, Patras University Hospital, Patras, Greece

[9]Rheumatology Department, University of Ioannina, Ioannina, Greece

[10]Department of Nephrology, Aretaieio Hospital, National and Kapodistrian University of Athens, Athens, Greece

[11]Department of Nephrology, University Hospital of Heraklion, Heraklion, Greece

O24 **LYMPHOCYTE SUBPOPULATIONS CAN PREDICT THE DEVELOPMENT OF ANTIBODIES AFTER VACCINATION AGAINST SARS-COV-2 IN HEMODIALYSIS PATIENTS AND KIDNEY TRANSPLANT RECIPIENTS**

I. Mallioras[1], C. Georgopoulos[1], A. Duni[1,2], G.S. Markopoulos[3], C. Pappas[1,2], E. Pappas[4], V. Koutlas[2], E. Tzalavra[2], G. Baxevanos[3,5], S. Priska[6], G. Katagis[7], K. Gartzonika[7], G. Vartholomatos[3], C. Milionis[8], E. Christaki[8], M.I. Mitsis[2], E. Dounousi[1,2,6]

[1]Department of Nephrology, University Hospital of Ioannina, Greece

[2]Department of Surgery and Kidney Transplant Unit, University Hospital of Ioannina, Greece

[3]Laboratory of Hematology - Unit of Molecular Biology, University Hospital of Ioannina, Greece

[4]Renal Unit, General Hospital of Filiates, Greece

[5]Internal Medicine Department, Hatzikosta General Hospital of Ioannina, Greece

[6]Department of Nephrology, School of Medicine, University of Ioannina, Greece

[7]Microbiology Laboratory, Faculty of Medicine, School of Health Sciences, University of Ioannina, Greece

[8] Department of Internal Medicine, School of Medicine, University of Ioannina, Greece

O25 **MULTICENTER STUDY TO EVALUATE THE IMPACT OF VACCINATION AGAINST SARS-COV-2 AND/OR COVID-19 IN THE CLINICAL COURSE OF PATIENTS WITH IGA NEPHROPATHY**

P. Kalogeropoulos[1], S. Marinaki[2], D. Gkalitsiou[3], C. Skalioti[2], P. Kriki[4], K. Kantartz[4], G. Moustakas[3], M. Papasotiriou[5], M. Karagiannis[1], M.-E. Agoranou[1], E. Grapsa[6], P. Nikolopoulos[1], S. Panagoutsos[4], I.N. Boletis[2], D. Goumenos[5], S. Lionaki[1]

[1]Department of Nephrology, 2nd Propaedeutic Internal Medicine, "Attikon" University Hospital, Medical School, National and Kapodistrian University of Athens, Athens, Greece

[2]National and Kapodistrian University of Athens Medical School, Laiko General Hospital, Department of Nephrology and Renal Transplantation, Athens, Greece

[3]General Hospital of Athens "G. Gennimatas", Athens, Greece

[4]Department of Nephrology, Medical School, Democritus University of Thrace, Alexandroupolis, Greece

[5]University Hospital of Patras, Department of Nephrology and Kidney Transplantation, Patras, Greece

[6]Aretaieion University Hospital, Nephrology Department, Athens, Greece

O26 MULTICENTER STUDY TO EVALUATE THE FREQUENCY OF ADVERSE REACTIONS ASSOCIATED WITH VACCINATION AGAINST SARS-COV-2 IN PATIENTS WITH PODOCYTOPATHIES

P. Kalogeropoulos[1], M. Papasotiriou[2], E. Ntounousi[3], S. Marinaki[4], P. Kriki[5], D. Gkalitsiou[6], G. Moustakas[6], V. Liakopoulos[7], V. Vaios[7], L. Gkika-Zervou[3], E. Andronikidi[8], M. Karagiannis[9], M.-E. Agoranou[1], P. Giannakopoulos[1], K. Stylianou[10], S. Panagoutsos[5], I.N. Boletis[4], D. Goumenos[2], S. Lionaki[1]

[1]Department of Nephrology, 2nd Propaedeutic Internal Medicine, "Attikon" University Hospital, Medical School, National and Kapodistrian University of Athens, Athens, Greece

[2]University Hospital of Patras, Department of Nephrology and Kidney Transplantation, Patras, Greece

[3]Department of Nephrology, University Hospital of Ioannina, Ioannina, Greece

[4]National and Kapodistrian University of Athens Medical School, Laiko General Hospital, Department of Nephrology and Renal Transplantation, Athens, Greece

[5]Department of Nephrology, Medical School, Democritus University of Thrace, Alexandroupolis, Greece

[6]General Hospital of Athens "G. Gennimatas", Athens, Greece

[7]Division of Nephrology and Hypertension, 1st Department of Internal Medicine, School of Medicine, Aristotle University of Thessaloniki, AHEPA Hospital, Thessaloniki, Greece

[8]Aretaieion University Hospital, Nephrology Department, Athens, Greece

[9]Department of Nephrology, 2nd Propaedeutic Internal Medicine, "Attikon" University Hospital, Medical School, National and Kapodistrian University of Athens, Athens, Greece

[10]University General Hospital of Heraklion, Nephrology, Heraklion, Greece

O27 THE COVID-19 INFECTION IN PATIENTS ON HEMODIALYSIS: SINGLE CENTER STUDY

V. Karanfilovski[1], Z. Sterjova-Markovska[1], A. Spasovska Vasilova[1,2], N. Gjorgjievski[1,2], M. Milenkova[1,2], A. Canevska Taneska[1,2], I. Nikolov[1,2], S. Pavleska Kuzmanoska[1,2], P. Dzekova-Vidimliski[1,2], G. Severova[1,2], L. Trajceska[1,2], I. Rambabova-Bushljetik[1,2]

[1]University Clinic of Nephrology, Skopje, Republic of N. Macedonia

[2]Medical Faculty Skopje, Un. Ss Cyril and Methodius, Skopje, Republic of N. Macedonia

Hall Alexandros I — Friday, October 20th

O28 **THE IMPACT OF CORONAVIRUS DISEASE -19 (COVID-19) ON KIDNEY TRANSPLANT FUNCTION**

G. Severova-Andreevska, A. Canevska-Taneska, M. Janeku-Kartalov, P. Dzekova-Vidimliski, M. Milenkova, A. Spasovska, N. Gjorgjievski, V. Pushevski, I. Nikolov, A. Severova-Stojanovska, Z. Janevski, L. Trajceska, I. Rambabova-Bushletik, G. Spasovski

Clinical Center "Mother Theresa", UC of Nephrology, Skopje, N. Macedonia

10:00-11:15 ROUND TABLE

GLOMERULAR DISEASES

Chairs: **M. Stangou, M. Nikolova**

10:00 - 10:20 IgA Nephropathy
M. Giannopoulou

10:20 - 10:40 FSGS: Insights and Novel Treatment Perspectives
E. Stamellou

10:40 - 11:00 Treatment Updates in ANCA-associated vasculitis and glomerulonephritis
S. Lionaki

11:00 - 11:15 Discussion

11:15-11:45 COFFEE BREAK

11:45-12:15 PLENNARY LECTURE

Chairs: **A. Papagianni, M. Arici**

European Kidney Health Alliance (EKHA)
R. Vanholder

SCIENTIFIC PROGRAM

HALL ALEXANDROS I — FRIDAY, OCTOBER 20th

12:15-13:30 ROUND TABLE

TRANSPLANTATION I

Chairs: **T. Eleftheriadis, S. Marinaki**

12:15 - 12:35	The Use of proteomic analysis in kidney transplantation **I. Rambabova Busletikj**
12:35 - 12:55	Resistant CMV infection in the kidney transplant recipients **N. Basic-Jukic**
12:55 - 13:15	Mineral Bone Disease after Kidney Transplantation **J. Filipov**
13:15 - 13:30	Discussion

13:30-14:30 LIGHT LUNCH

14:30-16:30 BREAK

16:30-17:00 SATELLITE LECTURE TEMAK TOTAL WATER SOLUTIONS

HOT WATER DISINFECTION: TRANSFORMING HEMODIALYSIS WATER TREATMENT

Chairs: **E. Grapsa**

Explore the cutting-edge technology of using hot water for disinfection in hemodialysis water treatment systems and distribution networks. Discover the numerous advantages over traditional chemical methods

Z. Tarabay, *Export Area manager - Biomedical Sciences*

SCIENTIFIC PROGRAM

HALL ALEXANDROS I — FRIDAY, OCTOBER 20th

17:00-18:15 ROUND TABLE

TRANSPLANTATION II

Chairs: **I.N. Boletis, M. Lausevic**

17:00 - 17:20 Immunologically high-risk kidney transplantation-the role of desensitization protocols
M. Kravljaca

17:20 - 17:40 Exchange donor program in kidney transplantation
L. Petrovic

17:40 - 18:00 Discarded kidneys from deceased donors: how far can we push the boundaries?
M. Darema

18:00 - 18:15 Discussion

18:15-18:45 SATELLITE LECTURE FARAN NEPHROLOGY

Chair: **D. Petras**

Changing the therapeutic landscape in IgA nephropathy. The value of targeted release budesonide
M. Stagkou

18:45-19:15 SATELLITE LECTURE AstraZeneca

Chair: **R. Kalaitzidis**

Newer treatment options in hyperkalemia management implemented in clinical practice
P. Georgianos

21:00 PRESIDENTS DINNER

SCIENTIFIC PROGRAM

Hall Alexandros I — Saturday, October 21st

09:00-09:30 LECTURE

Chairs: **P. Passadakis, S. Panagoutsos**

Role of Damage associated-molecular patterns in chronic renal injury associated inflammation
G. Kocic

09:30-10:00 ISN PIONEER AWARD PRESENTATION CEREMONY

Chairs: **S. Racki, V. Liakopoulos**
ISN President: **Nangaku Masaomi**
Award Winner: **Spasovski Goce**

10:00-11:15 ROUND TABLE

HYPERTENSION

Chairs: **R. Kalaitzidis, V. Pushevski**

10:00 - 10:20	Hypertension in ESRD **V. Vaios**
10:20 - 10:40	Atherosclerotic Renal Artery Stenosis – an update on treatment recommendations **M. Theodorakopoulou**
10:40 - 11:00	Hypertension as a key risk factor for cardiovascular disease in kidney transplant recipients **C. Melexopoulou**
11:00 - 11:15	Discussion

11:15-11:45 COFFEE BREAK

11:45-12:15 LECTURE

Chairs: **D. Goumenos, M. Mugosa Ratkovic**

Recent progress in the treatment of lupus nephritis
V. Tesar

HALL ALEXANDROS I — SATURDAY, OCTOBER 21st

12:15-12:45 LECTURE

Chairs: **A. Basci, I.N. Boletis**

Disaster Nephrology: The Role of a Renal Disaster Task Force
S. Tuglular

12:45-13:15 LECTURE

Chairs: **E. Thodis, S. Zarogiannis**

Challenges in diagnosis and management of Fabry nephropathy
E. Rusu

13:15-14:15 ROUND TABLE

GENETICS

Chairs: **F.R. Bob, P. Kyriklidou**

13:15 - 13:30	GWAS in Nephrology: Reconstructing CKD **A. Fountoglou**
13:30 - 13:45	Clinical significance of genetic tests in ADPKD **A. Duni**
13:45 - 14:00	Genetic testing in CKD when, how and why **K. Stylianou**
14:00 - 14:15	Discussion

14:15-14:45 SATELLITE LECTURE Bayer

Chair: **V. Liakopoulos**

Non-steroidal mineralocorticoid receptor antagonists (ns MRAs): a new therapeutic pillar for cardiorenal protection in patients with CKD and T2D
I. Stefanidis

14:45-17:00 BREAK

SCIENTIFIC PROGRAM

Hall Alexandros I | Saturday, October 21st

17:00-18:15	ROUND TABLE
	AKI Chairs: **D. Petras, G. Moustakas**
17:00 - 17:20	Inflammation and complement system in AKI **B. Dursun**
17:20 - 17:40	AKI in Cardiac Surgery **A. Kapota**
17:40 - 18:00	SGLT-2 inhibitors and AKI **P. Liaveri**
18:00 - 18:15	Discussion

Hall Alexandros II | Saturday, October 21st

8:30-10:00 | **ORAL PRESENTATIONS: DIALYSIS-GLOMERULAR DISEASES**

Chairs: **S. Golfinopoulos, A. Vainas**

O29 PATTERNS OF INTRADIALYTIC HYPOTENSION - CLINICAL ASSOCIATIONS

I. Grosu[1], F. Bob[1], O. Schiller[2], A. Schiller[1]

[1]*Nephrology Department, "Victor Babes" University of Medicine and Pharmacy, Timisoara, Romania*

[2]*B. Braun Hemodialysis Center, Timisoara, Romania*

O30 FACTORS AFFECTING MORTALITY WITHIN 6 MONTHS OF HEMODIALYSIS PATIENTS

E. Lipo[1], N. Pasko[2]

[1]*Regional Hospital of Korca, Albania*

[2]*Mother Teresa Hospital Tirana, Albania*

O31 CIRCULATING KIDNEY INJURY MOLECULE-1 AND CHRONIC INFLAMMATION AS RISK FACTORS OF MORTALITY IN HEMODIALYSIS PATIENTS

A. Sircuta[1], F. Bob[1,2], A. Schiller[1,2], L. Petrica[1,2], O. Schiller[3], M. Bodea[1,2], I. Goleț[4]

[1]*Dept. of Internal Medicine II – Division of Nephrology, "Victor Babeș" University of Medicine and Pharmacy Timisoara, Romania, Eftimie Murgu Sq. no. 2, 300041 Timișoara, RO; County Emergency Hospital Timisoara, Romania*

[2]*Centre for Molecular Research in Nephrology and Vascular Disease, Faculty of Medicine, "Victor Babeș" University of Medicine and Pharmacy, Timișoara, Romania Eftimie Murgu Sq. no. 2, 300041 Timișoara, Romania*

[3]*B. Braun Avitum Dialysis Center Timisoara, Romania*

[4]*FEAA, Dept. of Management, University "Vest" Timisoara, Romania*

O32 ASSOCIATION OF HIPPURIC ACID, INDOXYL SULFATE AND P-CRESYL SULFATE WITH AGE-RELATED LYMPHOCYTE CHANGES IN PATIENTS ON HEMODIALYSIS

T. Tourountzis[1*], G. Lioulios[2*], S. Van Laecke[3], M. Christodoulou[2], E. Moysidou[2], S. Stai[2], A. Fylaktou[4], G. Glorieux[3], M. Stangou[2]

[1]*Protypo Dialysis Center of Thessaloniki, Thessaloniki, Greece*

[2]*Department of Nephrology, Hippokration Hospital, School of Medicine, Aristotle University of Thessaloniki, Thessaloniki, Greece*

[3]*Department of Internal Medicine and Pediatrics, Nephrology unit, Ghent University Hospital, Gent, Belgium*

[4]*Department of Immunology, National Peripheral Histocompatibility Center, Hippokration Hospital, Thessaloniki, Greece*

*These authors contributed equally to this work.

O33 **ACCURACY OF FIXED 24-H AMBULATORY BLOOD PRESSURE RECORDINGS FOR DIAGNOSING HIGH 48-H AMBULATORY BLOOD PRESSURE IN HEMODIALYSIS PATIENTS**

M. Theodorakopoulou[1], F. Iatridi[1], A. Georgiou[1], A. Karagiannidis[1], E. Pella[1], A. Karpetas[2], E. Sampani[1], E. Karkamani[1], A. Papagianni[1], P. Sarafidis[1]

[1]First Department of Nephrology, Hippokration Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece

[2]Therapeutiki Hemodialysis Unit, Thessaloniki, Greece

O34 **THE INFLUENCE OF AMBULATORY BP ON THE ASSOCIATIONS OF SEX WITH CARDIOVASCULAR EVENTS AND MORTALITY IN DIALYSIS PATIENTS: A PROSPECTIVE COHORT STUDY**

F. Iatridi[1], M. Theodorakopoulou[1], A. Karagiannidis[1], A. Georgiou[1], A. Karpetas[2], E. Karkamani[1], D. Faitatzidou[1], N. Haddad[1], A. Papagianni[1], P. Sarafidis[1]

[1]First Department of Nephrology, Hippokration Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece

[2]Therapeutiki Hemodialysis Units, Thessaloniki, Greece

O35 **PROLONGED DURATION OF VASCULAR ACCESS FOR HEMODIALYSIS**

P. Dejanov[1], V. Pusevski[1], N. Gjorgjiev[1], Z. Janevski[1], G. Spasovski[1], N. Gramatnikovski[2]

[1]Clinic of Nephrology, Medical Faculty Skopje, R.N. Macedonia

[2]Clinic of Thoracovascular Surgery, Medical Faculty Skopje, R.N. Macedonia

O36 **TREATMENT WITH HIGH CUT OFF MEMBRANES IN LONG HEMODIALYSIS SESSIONS IN PATIENTS WITH MULTIPLE MYELOMA AND ACUTE KIDNEY INJURY: OUR EXPERIENCE**

Z. Shterjova- Markovska, I. Rambabova-Bushljetikj, L. Trajceska, I. Nikolov, G. Severova, V. Karanfilofski, J. Usprcov, A. Canevska-Tanevska, A. Kabova, Z. Janevski, Vl. Pushevski, G. Spasovski

University clinic for Nephrology, University Ss Cyril and Methodius, Skopje, North Macedonia

O37 **SODIUM BICARBONATE CATHETER LOCK SOLUTION IS NOT INFERIOR TO CITRATE SOLUTION IN PATIENTS DIALYZED THROUGH CENTRAL VENOUS CATHETER (CVC)**

A. Martika, M. Tsamelasvili-Koutsaki, K. Pozoukidou, I.-T. Lampropoulou, D. Salvaridis, S. Spaia

Nephrology Unit, General Hospital of Thessaloniki Agios Pavlos, Greece

O38 **THE EFFICACY AND SAFETY OF SUCROFERRIC OXYHYDROXIDE VERSUS SEVELAMER CARBONATE IN DIALYSIS PATIENTS: A META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS**

Ch. Georgopoulos[1], M. Garoufis[2], I. Mallioras[1], I. Alekos[1], L. Gkika[1], A. Douni[1], A. Kitsos[1], C. Pappas[1], Ch. Gouva[2], E. Dounousi[1]

[1]Nephrology Department, University General Hospital of Ioannina, Greece

[2]Hemodialysis Department, General Hospital of Arta, Greece

O39 **DISRUPTION OF PERITONEAL MEMBRANE BARRIER FUNCTION BY PROLONGED EXPOSURE TO PERITONEAL DIALYSIS FLUIDS IS RESTORED WITH 2-DEOXY-GLUCOSE (2-DG) ADMINISTRATION**

E. Pitaraki[1], R.M. Jagirdar[1], E. Rouka[2], M. Bartosova[3], S.I. Sinis[1,4], D. Divanis[5], K.I. Gourgoulianis[4], T. Eleftheriadis[6], I. Stefanidis[6], V. Liakopoulos[5], C. Hatzoglou[1], C. Peter Schmitt[3], S.G. Zarogiannis[1]

[1]Department of Physiology, Faculty of Medicine, School of Health Sciences, University of Thessaly, BIOPOLIS, Larissa, Greece

[2]Department of Nursing, School of Health Sciences, University of Thessaly, GAIOPOLIS, Larissa, Greece

[3]Pediatric Nephrology, Center for Pediatrics and Adolescent Medicine, University of Heidelberg, Heidelberg, Germany

[4]Department of Respiratory Medicine, Faculty of Medicine, School of Health Sciences, University of Thessaly, BIOPOLIS, Larissa, Greece

[5]2nd Department of Nephrology, AHEPA Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece

[6]Department of Nephrology, Faculty of Medicine, School of Health Sciences, University of Thessaly, BIOPOLIS, Larissa, Greece

O40 **INCREASED LEVELS OF PERIPHERAL IGD$^-$CD27$^-$ B CELLS IN PATIENTS WITH LUPUS NEPHRITIS CORRELATE WITH EARLY DIFFERENTIATED T LYMPHOCYTE SUBSETS**

E. Moysidou[1], G. Lioulios[1], M. Christodoulou[1], A. Xochelli[2], S. Stai[1], A. Papagianni[1], P. Sarafidis[1], A. Fylaktou[2], M. Stangou[1]

[1]School of Medicine, Aristotle University of Thessaloniki, 1st Department of Nephrology, Hippokration Hospital of Thessaloniki, Thessaloniki, Greece

[2]Department of Immunology, National Peripheral Histocompatibility Center, Hippokration Hospital of Thessaloniki, Thessaloniki, Greece

Hall Alexandros II | Saturday, October 21st

O41 **INVESTIGATING THE ROLE OF CIRCULATING FOLLICULAR T HELPER LYMPHOCYTES IN LUPUS NEPHRITIS**

E. Moysidou[1], M. Christodoulou[1], G. Lioulios[1], V.I. Nikolaidou[2], Christina Nikolaidou[3], P. Sarafidis[1], E. Frangou[4], A. Fylaktou[2], M. Stangou[1]

[1]School of Medicine, Aristotle University of Thessaloniki, 1st Department of Nephrology, Hippokration Hospital of Thessaloniki, Thessaloniki, Greece

[2]Department of Immunology, National Peripheral Histocompatibility Center, Hippokration Hospital of Thessaloniki, Thessaloniki, Greece

[3]Department of Pathology, Hippokration Hospital of Thessaloniki, Thessaloniki, Greece

[4]Department of Nephrology, Limassol General Hospital, State Health Services Organization, Cyprus; Department of Basic and Clinical Sciences, University of Nicosia Medical School, Cyprus; Laboratory of Autoimmunity and Inflammation, Biomedical Research Foundation of the Academy of Athens, Athens, Greece

10:00-11:15 ROUND TABLE

CKD PROGRESSION

Chairs: **D. Tsakiris, D. Papadopoulou**

10:00 - 10:20	Mechanisms and experimental data of SGLT-2 inhibition **T. Eleftheriadis**
10:20 - 10:40	Can we postpone CKD progression - where do we stand today? **G. Spasovski**
10:40 - 11:00	Artificial intelligence in CKD **T. Oikonomaki**
11:00 - 11:15	Discussion

11:15-11:45 **COFFEE BREAK**

HALL ALEXANDROS II | SATURDAY, OCTOBER 21st

11:45-13:00 ROUND TABLE

CKD TOPICS II

Chairs: **A. Yildiz, G. Bamichas**

11:45 - 12:05	Precision Medicine in Nephrology **S. Roumeliotis**
12:05 - 12:25	New biomarkers in CKD **I. Petrakis**
12:25 - 12:45	Clinical Aspects of Proteinuria **S. Ulu**
12:45 - 13:00	Discussion

13:00-13:30 SATELLITE LECTURE avanzanite® BIOSCIENCE

Chair: **V. Liakopoulos**

Targeting improved growth in children and bone density & quality of life in adults with dRTA using novel prolonged-release oral alkalizing agent

S. Stabouli

13:30-14:45 ROUND TABLE

CLINICAL EXPERIENCES

Chairs: **C. Christodoulidou, S. Ziakka**

13:30 - 13:50	What's the Consensus on Cardiorenal Protection for CKD in T2D? **M. Barbullushi**
13:50 - 14:10	Primary Glomerulopathies **M. Grujicic**
14:10 - 14:30	Exploring the Link Between Iron Deficiency, Heart Failure, and Cardiorenal Syndrome **G. Spanos**
14:30 - 14:45	Discussion

Hall Alexandros II | Saturday, October 21st

17:00-18:15	ROUND TABLE
	SPECIAL PROBLEMS IN CKD Chairs: **E. Papachristou, H. Resic**
17:00 - 17:20	Inflammatory bowel disease and the kidney – causes and consequences **M. Nikolova**
17:20 - 17:40	Quantifying Microvascular Abnormalities in Chronic Kidney Patients **D. Rebic**
17:40 - 18:00	Stroke and cognitive dysfunction in CKD patients **E. Dounousi**
18:00 - 18:15	Discussion

Faculty

Antoniadi Georgia, Director of the Renal Unit of General Hospital of Serres, Greece

Arici Mustafa, Professor Mustafa ARICI, MD Hacettepe University Faculty of Medicine Department of Nephrology Ankara, Türkiye

Bamichas Gerasimos, MD, PhD Nephrologist, Head Director, Nephrology Department "G. Papanikolaou" General Hospital, Thessaloniki, Greece

Barbullushi Myftar, Associated Professor, Department of Nephrology, University Hospital Center "Mother Tereza", Tirana, Albania

Basci Ali, MD FERA, Emeritus Professor of Internal Medicine and Nephrology Ege University Medical School Chief of Nephrology and Dialysis of Saglik Hospital Izmir, Turkiye

Basic-Jukic Nikolina, Proffesor, MD, PhD Clinical hospital centre Zagreb, President of Croatian Renal Association

Basile Carlo, Scientific Director of the Division of Nephrology Miulli General Hospital Acquaviva delle Fonti, Italy

Bob Flaviu Raul, Professor MD, PhD, habil. Senior consultant nephrology. 'Victor Babes' University of Medicine and Pharmacy "Victor Babes" University of Medicine and Pharmacy Dept. of Nephrology Timisoara, Romania

Boletis N. Ioannis, Emeritus Professor of Internal Medicine-Nephrology Medical School, National and Kapodistrian University of Athens, Greece

Christidou P. Foteini, Dr Nephrologist, Director of Renal Unit, General Hospital of Halkidiki, Greece

Christodoulidou Christalleni, Nephrologist, Director of "Evangelismos" Hospital, Athens, Greece

Chrysochoou Christina, Consultant Cardiologist-Head of Heart Failure Unit First Cardiology Clinic, "Hippokration" Hospital School of Medicine, University of Athens, Greece

Darema Maria, Senior consultant Nephrologist, MD, PhD, "Laiko" Hospital, Athens, Greece

Dimitriadis Chrysostomos, MD, PhD Nephrologist, Peritoneal Dialysis Unit 1st Department of Nephrology, Aristotle University of Thessaloniki, "Hippokration" General Hospital of Thessaloniki, Greece

Divani Maria, MD, PhD, MSc Nephrologist, General Hospital of Larissa, Greece

Duni Anila, Md Nephrologist, University Hospital of Ioannina, Greece

Dounousi Evangelia, Associate Prof of Nephrology and Kidney Transplantation, University of Ioannina and Head of Nephrology Dept, University Hospital of Ioannina, Ioannina, Greece

Dursun Belda, Professor, Dr, Pamukkale University Medical School, Department of Internal Medicine, Division of Nephrology, Denizli, Turkey

Faculty

Eleftheriadis Theodoros, Professor of Nephrology, Faculty of Medicine, University of Thessaly, Greece

Filipov Jean, PhD Nephrologist, Assistant Professor, Department of Nephrology and Transplantation, University Hospital "Alexandrovska", Medical University of Sofia, Sofia, Bulgaria

Filippidis Georgios, Consultant Nefrologist, Nefrology Clinic, University Hospital of Larissa, Greece

Fountoglou Anastasios, MD, MSc, PhD student, Nephrologist, University of Ioannina, Greece

Georgianos I. Panagiotis, MD, PhD, Assistant Professor of Nephrology, 2nd Department of Nephrology, School of Medicine, Aristotle University of Thessaloniki, Greece

Giannopoulou Myrto, MD, PhD Consultant Nephrologist Renal Department, "Evangelismos" Hospital, Athens, Greece

Golfinopoulos Spyridon, MD, MSc, Consultant of Nephrology, Nephrology Department University Hospital of Larissa, Greece

Goumenos Dimitrios, Professor of Nephrology, Head of Dpt of Nephrology and Renal Transplantation, Patras University Hospital, Secretary General Elect ERA, Greece

Grapsa Eirini, Professor of Nephrology, EKPA, Director of the University Nephrology Clinic, "Aretaiio" Hospital, Athens, Greece

Grujičić Milorad, Associate Professor Department of Nephrology and Plasmapheresis, Internal Medicine Clinic, University Clinical Center of the Republic of Srpska, Banja Luka, Bosnia and Herzegovina

Kalaitzidis G. Rigas, Center of Nephrology, General Hospital of Nikaia-Piraeus, Greece, Director Nephrologist N.S.H Center of Nephrology, General Hospital of Nikaia-Piraeus, Greece

Kantartzi Konstantia, Assistant Professor of Nephrology Democritus University of Thrace, Greece

Kapota Athanasia, Consultant Nephrologist, Nephrology Department, "Hippokration" General Hospital, Athens Greece

Kocic Gordana, Full Professor, MD, PhD. Full member of the Academy of Medical Sciences Serbian Medical association

Kravljaca Milica, MD PhD Clinic of Nephrology, Clinical Center of Serbia, Belgrade, Serbia

Kyriklidou Parthena, MD, PhD Consultant Nephrologist Department of Nephrology "Papageorgiou" General Hospital Thessaloniki, Greece

Lausevic Mirjana, Clinic of Nephrology, Clinical Center of Serbia, Belgrade, Serbia and Montenegro

Leivaditis Konstantinos, MD, PhD Head Nephrologist "Nephroxenia" Chalkidiki Dialysis Centre. Research Fellow- 2nd Department of Nephrology AHEPA Hospital, Thessaloniki, Greece

Faculty

Liakopoulos Vassilios, MD, PhD, FISN Professor of Nephrology Head of 2nd Department of Nephrology "AHEPA" University Hospital Medical School Aristotle University of Thessaloniki, Greece

Liaveri Paraskevi, Consultant Nephrologist, Nephrology Department, General Hospital of Athens "G. Gennimatas", Athens, Greece

Lionaki Sofia, MD, As. Professor in Nephrology, National and Kapodistrian University of Athens. Head of the Nephrology Unit, 2nd Department of Internal Medicine, "Attikon" University Hospital, Greece

Marinaki Smaragdi, Associate Professor of Nephrology, Head of the Clinic of Nephrology and Renal Transplantation, NKUA, Medical School of Athens, "Laiko" Hospital, Greece

Melexopoulou Chrisitna, Consultant Nephrologist Department of Nephrology & Renal Transplantation National and Kapodistrian University of Athens "Laiko" General Hospital, Athens, Greece

Moustakas Georgios, Nephrologist, head of Nephrology Department, General Hospital "G. Gennimatas", Athens, Greece

Mugosa Ratkovic Marina, Professor of Nephrology, Department of Nephrology, University Clinical Center, Podgorica, Montenegro

Nangaku Masaomi, ISN President

Nikolova Milena, Assoc. Prof. Dr. Milena Nikolova, MD, PhD, Assoc. Prof. Clinic of Nephrology, University Hospital St. Ivan Rilski, Medical University-Sofia, Bulgaria

Oikonomaki Theodora, MD MSc PhD Nephrologist / "Evaggelismos" General Hospital of Athens, Greece

Panagoutsos Stylianos, Professor of Nephrology, Democritus University of Thrace, University General Hospital of Alexandroupolis, Greece

Papachristou Evangelos, MD, PhD Associate Professor Department of Nephrology University of Patras Medical School, Greece

Papadopoulou Dorothea, Special Nephrologist – Director – Head of the Nephrology Department (General Hospital ''Papageorgiou'' of Thessaloniki), Thessaloniki, Greece

Papagianni Aikaterini, MD, PhD, FERA Professor of Nephrology, Aristotle University of Thessaloniki, Greece

Papasotiriou Marios, Assistant Professor of Internal Medicine – Nephrology, Department of Nephrology and Kidney Transplantation, University Hospital of Patras, Greece

Passadakis Ploumis, Emeritus Professor of Nephrology, Democritus University of Thrace, Medical School, Alexandroupolis, Democritus Nephrology Center, Renal Unit, Komotini, Greece

Faculty

Petrakis Ioannis, MD., Ph.D., Consultant Nephrologist, Department of Nephrology, Heraklion University Hospital, Crete, Greece

Petras Dimitrios, MD, PhD Nephrologist, Head of Nephrology Department, "Hippokration" General Hospital, Athens Greece

Petrovic Lada, Associate Professor. Clinical Center of Vojvodina, Clinic for Nephrology and Clinical Nephrology, Faculty of Medicine, University in Novi Sad, Serbia

Pushevski Vladimir, Assistant Professor, Faculty of Medicine, SS Cyril and Methodius University, Skopje, R. North Macedonia

Racki Sanjin, Professor, MD, PhD Head of Nephrology and Dialysis Department at Clinical Hospital Center Rijeka, Croatia

Rambabova Busletikj Irena, Associtate Professor Nephrology Clinic, Faculty of Medicine, University "Ss.Cyril and Methodius", Skopje, Republic of North Macedonia

Rebić Damir, Full Professor of Internal Medicine at the Faculty of Medicine of he University of Sarajevo, Bosnia and Herzegovina

Resic Halima, Associate. Professor dr. – Emeritus, Bosnia and Herzegovina

Roumeliotis Stefanos, M.D, PhD, Nephrologist, Academic Researcher 2nd Department of Nephrology, "AHEPA" Hospital, Medical School, Aristotle University of Thessaloniki, Greece

Rusu Elena, Assistant Professor, PhD., Romania

Spanos Georgios, MD, PhD Consultant Nephrologist General Hospital of Thessaloniki, "G. Papanikolaou", Thessaloniki, Greece

Spasovski Goce, MD, PhD, FERA University Clinic for Nephrology Medical Faculty University St. Cyril and Methodius Skopje, N. Macedonia

Stamellou Eleni, MD,PhD, M.Sc Nephrology Department, University of Ioannina, Greece. Division of Nephrology and Clinical Immunology, RWTH Uniklinik Aachen, Germany

Stangou Maria, Associate Professor in Nephrology, 1st Department of Nephrology School of Medicine, Aristotle University of Thessaloniki, Greece

Stefanidis I. Ioannis, Professor of Internal Medicine – Nephrology, Clinic of Nephrology (Head) Medical School, University of Thessaly, Larissa, Greece

Stylianou Konstantinos, Dr. Assistant Professor of Nephrology School of Medicine, University of Crete Head of the Nephrology Department Heraklion University Hospital, Greece

Tesar Vladimir, MD, PhD, MBA, FASN, FERA, FISN Professor of Nephrology, Head, Department of Nephrology, 1st Faculty of Medicine, Charles University, Prague

Faculty

Theodorakopoulou Marieta, Research fellow, 1st Department of Nephrology, "Hippokration" Hospital, Aristotle University of Thessaloniki, Greece

Thodis Elias, Professor of Nephrology, Democritus University of Thrace, Greece

Tsakiris Dimitrios, DR. Ph.D (Glasgow)

Tsouchnikas Ioannis, Nephrologist, "Hippokration" General Hospital, Thessaloniki, Greece

Tuglular Serhan, Professor Dr, MD, FERA Marmara University School of Medicine Division of Nephrology, Chair

Ulu Sena, MD Professor Department of Internal Medicine and Nephrology, Bahçeşehir University Faculty of Medicine, Istanbul, Turkey

Vainas Andreas, Nephrologist, Scientific Director of Medialyse Dialysis Center, Evosmos, Thessaloniki, Greece

Vaios Vasileios, MD, PhD Nephrologist 2nd Department of Nephrology "AHEPA" University Hospital Thessaloniki, Greece

Vanholder Reymond, Professor Em University Ghent, Belgium

Yildiz Alaattin, Professor of Nephrology, Department of Nephrology and Kidney Transplantation, Memorial Şişli Hospital, Istanbul, Turkey, Department of Nephrology, Istanbul Faculty of Medicine, Istanbul University, Turkey

Zarogiannis Sotirios, PhD, MPH, Associate Professor of Physiology, Faculty of Medicine, University of Thessaly, Greece

Ziakka Stavroula, Director NHS, Nephrology Department of "Korgialeneio Benakeio" Hospital, Athens, Greece

Ziakkas Antonios, Professor of Cardiology Director of 1st Cardiology Department, "AHEPA" University Hospital, Thessaloniki, Greece

ISSN 1312 - 2517

BANTAO Journal

BANTAO Journal 2023; volume 21: Supplement 1: pages 44-103 - October, 2023

ORAL PRESENTATIONS

01 POTENTIAL PREDICTORS OF DIABETIC NEPHROPATHY IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

S. Ilieva[1], E. Naseva[2], L. Lozanov[1]

[1]*Clinic of Internal Diseases, Acibadem CityClinic University Hospital Tokuda, Sofia, Bulgaria*
[2]*Faculty of Public Health "Prof. Tsekomir Vodenicharov, MD, DSc", Medical University of Sofia, Bulgaria*

Diabetic nephropathy (DN) is not only a leading cause of ESRD, but is also an independent risk factor of cardio-vascular mortality in diabetics. The multifactorial pathogenesis of DN is illustrated by many scientific researches. Nevertheless, there are no affirmed biomarkers of its presence, except albuminuria and kidney biopsy still stays the only method that confirms the diagnosis.

Aim of the study: to reveal the relationship between certain biomarkers and development of DN in patients with type 2 Diabetes Mellitus.

Material and methods: 81 patients are studied (49 males and 32 females), aged between 22 and 75 years. All of them are with CKD and histologically proven nephropathies, regardless of kidney function. 48 of them are with T2DM and the rest 33 are non-diabetics. The patients are divided into 3 groups, according to histological findings: 1-st group (n=30): diabetics with DN; 2-nd group (n=18): diabetics with other nephropathies, without DN and 3-rd group: non-diabetics. Serum creatinine, e-GFR, Cystatin C, proteinuria, lipid profile, Il-6, CRP, fibrinogen, D-dimer, homocysteine, folic acid, methylentetrahydrofolate reductase gene polymorphism (MTHFR A1289C and C677T) are tested in all patients.

Results: Serum homocysteine is significantly increased in diabetics with DN (p=0,034), compared with diabetics without DN. Also, there is a significantly increased level of serum Il-6 (p=0,019) and serum fibrinogen (p=0,012) in all diabetics, compared to non-diabetics. There is no significant difference between the rest biomarkers among the three groups.

Conclusion: Larger studies are needed to determine the predictive value of the particular biomarkers for the development of DN.

ASSOCIATION BETWEEN VISFATIN AND CHRONIC KIDNEY DISEASE

P. Petrov, S. Staykova
Clinic of Nephrology, University Hospital St. Marina Varna, Bulgaria

Aim: Chronic kidney disease (CKD) is a serious public health problem that can lead to end-stage renal disease, increased cardiovascular morbidity and mortality. Identification of the factors predisposing to the development of CKD is essential as some of these can be modified, prevented or decelerate progression. Visfatin is a 52 kDa protein predominantly secreted by the visceral adipose tissue which has proinflammatory, insulin-mimetic and anti-apoptotic activities. It is secreted by activated lymphocytes, monocytes, and neutrophils and stimulates IL-6 secretion via the P38 mitogen-activated protein kinase (MAPK) and MAPK kinase-1 pathways. It also induces the expression of human inflammatory mediators on endothelial cells via the nuclear factor (NF)-κB pathway.

Material & Method: The object of the study was a total of 80 patients with chronic kidney disease, divided into two groups - pre-dialysis and hemodialysis treatment from the Clinic of nephrology, University hospital "St. Marina" – Varna. Inflammatory markers, visfatin, sEPOR, iFGF-23 and iPTH levels were investigated.

Results: The diagnostic value of Visfatin as a non-invasive marker of inflammation in patients undergoing dialysis treatment has been established. Visfatin levels significantly decrease in the presence of an inflammatory process in patients undergoing dialysis treatment. It levels negatively correlate with duration of dialysis treatment.

Conclusions: From published studies, it has been shown that elevated serum visfatin levels can be considered as a marker of endothelial dysfunction and thus participate in the prediction of cardiovascular disease incidence in patients with chronic kidney disease.

03 EFFECTS OF SODIUM-GLUCOSE CO-TRANSPORTER 2 INHIBITORS ON CARDIOVASCULAR MORTALITY IN CHRONIC KIDNEY DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS

E. Pella[1], M.E. Alexandrou[1], M. Theodorakopoulou[1], A. Tsitouridis[1], F. Iatridi[1], A. Karagiannidis[1], D. Faitatzidou[1], E. Sampani[1], V. Kamperidis[2], A. Papagianni[1], P. Sarafidis[1]

[1]*First Department of Nephrology, Hippokration Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece*

[2]*First Department of Cardiology, AHEPA Hospital, Athens, Greece*

Objective: In studies of patients with chronic kidney disease (CKD), recommended nephroprotective therapy with ACE-inhibitors or ARBs has not been shown to reduce cardiovascular (CV) events or mortality. Sodium-glucose co-transporter 2 (SGLT-2) inhibitors reduce cardiovascular events and death in patients with diabetes and established CV disease; evidence from studies in populations with CKD has been inconsistent. The aim of this meta-analysis was to evaluate the effect of SGLT-2 inhibitors on CV mortality in patients with CKD.

Material & Method: Studies were identified by search in major electronic databases (PubMed/MEDLINE, Scopus, Cochrane Library and Web of Science) (PROSPERO ID: CRD42022382863). We included randomized controlled trials assessing the effect of SGLT-2 inhibitors on the primary outcome, time to cardiovascular death, in patients with CKD at baseline. Secondary outcomes included all-cause mortality and major adverse cardiac events (MACE).

Results: Eleven studies with 83,203 participants with CKD were eligible for inclusion in the meta-analysis. Treatment with SGLT-2 inhibitors, compared to placebo, reduced the risk of CV death by 14% (hazard ratio [HR] 0.86;95%CI 0.79-0.94), of all-cause death by 15% (HR 0.85; 95%CI 0.79-0.91) and of MACE by 13% (HR 0.87; 95%CI0.81-0.93). A consistent treatment effect on the primary outcome was observed with all SGLT-2 inhibitors(canagliflozin: HR 0.84; 95%CI 0.69-1.02, dapagliflozin: HR 0.89; 95%CI 0.78-1.01, empagliflozin: HR 0.82;95%CI 0.69-0.97 sotagliflozin: HR 0.90; 95%CI 0.73-1.12) studied (p subgroup-differences = 0.85). Sensitivity analysis pooling data from studies including only diabetic patients with CKD yielded similar results (HR 0.86;95%CI 0.77-0.97).

Conclusions: Treatment with SGLT-2 inhibitors led to a significant reduction in the risk for CV and all-cause mortality in CKD patients. These findings support the use of these agents also for protection against cardiovascular events and death in CKD.

EFFECTS OF SODIUM-GLUCOSE CO-TRANSPORTER 2 INHIBITORS ON HEART FAILURE IN CHRONIC KIDNEY DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS

M. Theodorakopoulou[1], M.E. Alexandrou[1], E. Pella[1], F. Iatridi[1], A. Tsitouridis[1], V. Kamperidis[2], E. Sampani[1], E. Karkamani[1], A. Xanthopoulos[3], A. Papagianni[1], P. Sarafidis[1]

[1]*First Department of Nephrology, Hippokration Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece*

[2]*First Department of Cardiology, AHEPA Hospital, Athens, Greece*

[3]*Cardiology Department, University of Thessaly, Larissa, Greece*

Objective: Sodium-glucose co-transporter 2 (SGLT-2) inhibitors significantly reduce the risk for hospitalizations for heart failure (HF) in patients with diabetes, and HF; findings in patients with chronic kidney disease (CKD) are not uniform. We aimed to perform a meta-analysis exploring the effect of SGLT-2 inhibitors on HF events in patients with CKD and across subgroups defined by baseline kidney function.

Material & Method: A systematic search in major electronic databases was performed. Randomized controlled trials providing data on the effect of SGLT-2 inhibitors on the primary outcome, time to hospitalization or urgent visit for worsening HF in patients with prevalent CKD at baseline or across subgroups stratified by baseline estimated glomerular-filtration-rate (eGFR) were included.

Results: Twelve studies (n=89,191 participants) were included in the meta-analysis. In patients with CKD, treatment with SGLT-2 inhibitors reduced the risk for HF events by 32% compared to placebo (hazard ratio [HR] 0.68;95%CI 0.63-0.73). Reduction in HF events with SGLT-2 inhibitors was more prominent in patients with eGFR<60 ml/min/1.73m2 (HR 0.68; 95%CI 0.62-0.74) than in those with eGFR>=60 ml/min/1.73m2 (HR 0.76;95%CI 0.69-0.83). Subgroup analysis according to type of SGLT-2 inhibitor showed a consistent treatment effect across all studied agents (p subgroup-analysis=0.44). Sensitivity analysis including data from studies including only diabetic patients showed an even more pronounced effect in eGFR subgroup<60ml/min/1.73m2 (HR 0.62; 95%CI 0.54-0.70).

Conclusions: Treatment with SGLT-2 inhibitors led to a significant reduction in HF events in patients with CKD. These findings may change the landscape of HF treatment in patients with advanced CKD.

05

ANEMIA MANAGEMENT AND MAGNESIUM IN ADVANCED CKD PATIENTS

A. Karanfilovikj[1], S. Sulejman[1], A. Canevska Taneska[1], M. Milenkova Bogojevska[1], A. Spasovska Vasilova[1], Z. Shterjova Markovska[1], J. Usprcov[1], V. Karanfilovski[1], A. Stojanoska Severova[1], A. Memeti[1], Z. Janevski[1], S. Filipovski[1], B. Bedzeti[1]

[1]*University Department of Nephrology, University "Ss Cyril and Methodius" Medical Faculty, Skopje, Republic of North Macedonia*

Introduction: Hypomagnesaemia and hypermagnesaemia, imply an increased risk of cardiovascular disease, arrhythmias and mortality. Serum magnesium levels increase when the glomerular filtration rate(GFR) falls below 30mL/min. Dietary restrictions and medications can alternate and lower this ion, since potassium-rich foods are also rich in magnesium and diuretics and proton pump inhibitors enhance elimination and decrease absorption. Renal anemia is well known cause of mortality in CKD patients. The aim of this study was to investigate the serum levels of magnesium in patients with advanced CKD and its association with erythropoietin resistance.

Material and methods: This study included 27 CKD 4-5 outpatients assessed for anemia and erythropoietin resistance index (ERI). inflammatory markers, electrolytes and parathormone(PTH) were analyzed as cofounding factors of epoetin resistance.

Results: Patients aged 73.13 ± 13.00 years and 54% were men. The vast majority gained good hemoglobin levels (mean 112.86 ± 9.0) with weekly dose of epoetin 2909.09 ± 2244.76IU and ERI value 0.40 ± 0.33 IU/Kg/w/g/L. The calcium, phosphorous, PTH and potassium(2.2 ± 0.16; 1.3 ± 0.30; 294.33 ± 211.33; 5.2 ± 0.58, respectively) implied good compliance to diet restrictions. Inflammatory markers as ferritin, leukocytes, CRP were slightly elevated and albumin level was satisfactory(338.86 ± 269.75; 6.71±2.1;5.34 ± 7.12; 43.45 ±4.2, respectively). Magnesium levels ranged from 0.58-1.58(mean value of 0.96 ±0.2). None of the laboratory parameters correlated with the magnesium level. Only the CRP level showed significant correlation to ERI(r=0.450, p=0.034).

Conclusion: Advanced CKD patients compliant to therapy and diet achieve good magnesium level and anemia management.

SOME RELATIONSHIPS BETWEEN ZINC DEFICIENCY AND CHRONIC KIDNEY DISEASES (CKD)

D. Yonova[1], V. Dimitrova[1], D. Arabadjieva[1], N. Velkova[1], V. Manolov[2], I. Trendafilov[2], V. Papazov[2], V. Vasilev[3], I. Popov[4], D. Ilcheva[4], D. Ahmedov[4]

[1]Sofia University Hospital "Lozenetc", Bulgaria

[2]Med. University, Sofia, Bulgaria

[3]Private Clin. Lab."Ramus", Sofia, Bulgaria

[4]Nephrol.Dial.Clinic, University Hospital, St. Zagora, Bulgaria

Key words: serum Zinc (s-Zn), End Stage Renal Diseases (ESRD), Superoxyde Dismutase (SOD), Gluthatione Peroxidase (GPox)

Aim: s-Zn decreases in CKD and is lower in ESRD and dialysis. Patients develop Zn deficiency during hemodialysis losses, inadequate diet, malabsorption. Oxidative stress in CKD contributes to microvascular complications and zinc-containing antioxidant enzymes (SOD and GPox) reduction. This study investigated Zn deficiency, antioxidant enzymes and CKD progression, and Influence of Zn supplementation on albuminuria.

Material and Methods: We investigated s-Zn and GPox levels in two groups, with Zn levels<60μg/dl (low-Zn group n=65) and ≥60μg/dl (high-Zn group n=63) comparing them with stage of CKD. (Primary outcome was defined as ESRD or death and was examined over 1-year). Additionally we evaluated 6-months effect of Zn supplementation on albuminuria in 2 CKD groups - with microalbuminuria (36 subjects) and, with high-significant proteinuria (34).

Results: In the first 2 groups mean s-Zn was 60.2μg/dl (median eGFR - 22.4ml/min). The incidence of primary outcome was higher in the low-Zn group ($p<0.001$). Various Cox proportional hazards models adjusted for baseline characteristics showed higher risks of primary outcome in the low-Zn group. In competing risks analysis low s-Zn was associated with ESRD but not with death. An interaction was registered between s-Zn and s-albumin ($p=0.025$).

In Zn-supplemented groups, there was significant microalbuminuria reduction (from 95 +/- 65 mg/g to 76 +/- 58 mg/g creatinine ($p<0.005$), but not - high-significant proteinuria.

Conclusion: The results indicate: Zn deficiency is risky for CKD-progression and supplementation reduces microalbuminuria, but not high-significant proteinuria.

07 GFR SLOPE AS A PREDICTOR OF KIDNEY FUNCTION RELATED TO ANTHROPOMETRIC PARAMETERS

V. Godanci Kelmendi[1], M. Ramadani Piraj[1], S. Konjufca[2], F. Ymeri[2]

[1]*University Clinical Centre of Kosova, Nephrology Clinic, Albania*

[2]*Asklepi Med Ambulance for Internal Medicine – Nephrology, Albania*

Introduction: Calculation of eGFR on a daily clinical basis is optimized through artificial intelligence, many virtual equipments and possibilities.

Choosing the right formula for each patient is a challenge and makes the difference!

The slope of eGFR is a significant numerical predictor of progression or attenuation of chronic kidney disease.

A burden between the clinician and the patient remains understanding these GFR slopes and providing the best treatments and lifestyle regimen to keep the numbers high meaning a kidney function is at its optimal limit.

Materials and methods: We conducted a retrospective cohort study of 450 outpatient clinic subjects, data from 450 CKD patients where included.

We assessed treatment effects on GFR slope for chronic slope starting at 3 months after baseline randomization and continuing for 36 months, we analyzed the association of treatment effects on GFR slope, changes in BSA and different formulas to estimate optimal GFR in order to demonstrate the impact of treatment on different groups of patients!

Results: The eGFR slope was observed in all treated groups and can be used as a relevant marker towards CKD regression!

BSA as an anthropometric parameter marked a difference in GFR estimation with the CKD EPI and MDRD formula, and changes in BSA influenced the long-term outcome of CKD.

Conclusions: In our study, the slope of eGFR was directly related to treatment modality, and the improvement of anthropometric parameters at 36 months of observation made a difference in CKD mitigation and treatment optimization.

Key words: eGFR slope, CKD, anthropometric.

IDENTIFYING INDIVIDUALS AT RISK OF NEEDING CKD ASSOCIATED MEDICATIONS IN A EUROPEAN KIDNEY DISEASE COHORT

E. Stamellou[1,2], T. Saritas[1], M. Froissart[3], F. Kronenberg[4], P. Sternvinkel[5], D.C. Wheeler[6], K.-U. Eckardt[7], J. Floege[1], J. Fotheringham[8,9]

[1]*Department of Nephrology, RWTH University of Aachen, Aachen, Germany*

[2]*Department of Nephrology, University Hospital of Ioannina, Ioannina, Greece*

[3]*Centre de Recherche Clinique (CRC), Lausanne University Hospital, Lausanne, Switzerland*

[4]*Department of Genetics, Institute of Genetic Epidemiology, Medical University of Innsbruck, Innsbruck, Austria*

[5]*Division of Renal Medicine, Department of Clinical Science, Intervention and Technology, Karolinska Institutet, Stockholm, Sweden*

[6]*Department of Renal Medicine, University College London, London, UK*

[7]*Department of Nephrology and Medical Intensive Care, Charité-Universitätsmedizin Berlin, Berlin, Germany*

[8]*Northern General Hospital, Sheffield Kidney Institute, Herries Road, Sheffield, South Yorkshire, S5 7AU, UK*

[9]*School of Health and Related Research, University of Sheffield, Sheffield, UK*

Running Title: Risk factors for CKD-medication in G4/CKD

Background: The consequences of chronic kidney disease (CKD) can be addressed with a range of pharmacotherapies principally prescribed by nephrologists. More accurate information regarding risk for future CKD related pharmacotherapy could guide clinical decisions including follow-up frequency.

Methods: Following the generation of derivation and validation groups, variables predicting individually future use of vitamin D receptor agonists (VDRA), phosphate binders, erythropoiesis stimulating agents (ESAs) and iron were identified using logistic regression in a prospective cohort study containing demography, comorbidity, hospitalization, laboratory, and mortality data in patients with CKD stage G4 across six European countries. Discriminative ability was measured using C-statistics, and predicted probability of medication use used to inform follow-up frequency.

Results: A total of 2196 patients were included in the analysis. During a median follow-up of 735 days 648 initiated hemodialysis and 1548 did not. Combinations of iPTH, calcium, diabetes status, hemoglobin, S-albumin and age predicted ESA, iron, phosphate binder or VDRA use, with C-statistics of 0.70, 0.64, 0.73 and 0.63 in derivation cohorts. Model performance in validation cohorts were similar. Approximately 16% of patients were predicted to have of using ESA, iron, phosphate binders, and VDRA of less than 20%.

Conclusions: In a multi-country CKD cohort, prediction of ESA and phosphate binder use over a two-year period can be made based on patient characteristics with the potential to extend follow-up in individuals with low risk for requiring these medications.

Keywords: CKD G4, CKD-MBD, renal anemia, ESAs, VDRA, phosphate binders.

09 RESPONSE TO TOZINAMERAN VACCINATION IN RENAL TRANSPLANT RECIPIENTS IS ASSOCIATED WITH A DISTINCT INITIAL PROFILE OF IMMUNITY CELLS AND WITH CERTAIN ALTERATIONS IN THEIR SUBPOPULATIONS

S. Stai[1,2], A. Fylaktou[3], E. Kasimatis[1,2], A. Xochelli[3], G. Lioulios[1,2], V. Nikolaidou[3], A. Papadopoulou[4], G. Myserlis[1,5], A.M. Iosifidou[1], M.A. Iosifidou[1], A. Papagianni[1,2], E. Yannaki[4], G. Tsoulfas[1,5], M. Stangou[1,2]

[1]*School of Medicine, Aristotle University of Thessaloniki, Thessaloniki, Greece*

[2]*1st Department of Nephrology, Hippokration Hospital, Thessaloniki, Greece*

[3]*Department of Immunology, National Histocompatibility Center, Hippokration General Hospital, Thessaloniki, Greece*

[4]*Hematology Department- Hematopoietic Cell Transplantation Unit, Gene and Cell Therapy Center, "George Papanikolaou" Hospital, Thessaloniki, Greece*

[5]*Department of Transplant Surgery, Hippokration General Hospital, Thessaloniki, Greece*

Objective: Immune status profile can predict response to vaccination, while alterations in the lymphocytes' phenotype can be representative of its effectiveness. We prospectively evaluated these parameters in renal transplant recipients (RTRs), with regards to Tozinameran (BNT162b2) vaccination.

Material & Method: Adult RTRs, on stable immunosuppression, naïve to COVID-19, with no protective humoral response after 2 Tozinameran doses, received the third vaccination dose, and, based on their immunity activation, were classified as responders or non-responders. We analyzed their immune cell subpopulations' composition at predefined time points (T_0: 48 hours before the first, T_1: 48hours preceding the third and T_2: three weeks after the third dose administration).

Results: Responders, compared to non-responders, had a higher total and transitional B-lymphocyte count at baseline [96.5(93) vs. 51(52)cells/μL, p:0.045 and 9(17) vs. 1(2)cells/μL, p:0.031 respectively]. In the responders' group, there was a significant increase, from T_0 to T_1, in the concentrations of activated CD4+ [from 6.5(4) to 10.08(11) cells/μL, p:0.001] and CD8+ [from 8(19) to 14.76(16)cells/μL, p:0.004] and a drop in CD3+PD1+ T-cells [from 130(121) to 30.44(25)cells/μL, p:0.001], while naïve and transitional B-cells were increased from T_1 to T_2 [57.55(66) vs. 1149.3(680)cells/μL, p<0.001 and 1.4(3) vs. 17.5(21)cells/μL, p:0.003 respectively]. Percentages of memory and marginal zone B-lymphocytes, activated CD4+, CD8+ and natural killer (NK) T-cells were significantly increased, while those of naïve B-cells and CD3+PD1+ T-cells were reduced from T_0 to T_1.

Conclusions: Responders and non-responders to BNT162b2 third dose, have demonstrated distinct initial immune cell profiles and changes in cellular subpopulations' composition following vaccination.

IS OBESITY BECOMING ROUGH CAUSE MOMENTUM IN KIDNEY DONORS MORTALITY?

S. Filipovski, L. Trajceska, I. Rambabova Busljetikj, G. Severova, I. Nikolov, Z. Shterjova, S. Sulejman, Al. Taneska, M. Milenkova, V. Pusevski, N. Gjorgjijoski, G. Spasovski
P.H.I. University Clinic for Nephrology – Skopje, North Macedonia

Background and aims: The aim of this study to identify pretransplant donor related factors associated with renal function decline and mortality.

Methods: We studied donor cohort from one transplant center with 5 years of follow up. Demographic characteristics as age, gender and the presence of diabetes, hypertension, hyperlipidemia and BMI >30kg/m^2 were analyzed. Estimated GFR by CKD EPI was notified prior donation and yearly afterwards. In a multivariate regression analysis the reduction ratio (RR) of GFR was explored as dependent variable. Cox regression analysis exploited mortality.

Results: 75 donors with average age 58.80 ± 10.81 years had eGFR 94.01 ± 19.78 mL/min, 7(9%) had BMI>30, 8(10%) diabetes. GFR declined to 66.07±21.29ml/min at the fifth year. The RR of 25.43±19.32% and 28.36±20.44% raised on yearly bases, respectively. Mortality rate was 6.7% and 71% of those with obesity. In the multivariate analysis BMI>30kg/m^2 remained as most powerful predictor at 12 and 24 months reduction of eGFR and lost the significance in the fifth year. Survival of obese patients was significantly shorter 43.28±7.51 vs 59.33±0.65, Log rank p=0.000. In the Cox regression mortality analysis age above 65, diabetes, hyperlipidemia and obesity increased the risk, but BMI>30 emerged as most powerful factor (HR40.02;CI:[4.11-389),p=0.0001).

Conclusions: Patients with diabetes and especially with obesity are at higher risk of rapid decline in kidney function and mortality after kidney donation.

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PULSE WAVE VELOCITY AND RENAL RESISTIVE INDEX IN KIDNEY TRANSPLANTED PATIENTS-OUR EXPERIENCES

S. Pavleska Kuzmanoska[1], Z. Janevski[1], N. Gjorgijevski[1], B. Gerasimovska[1], M. Angelovska[2], M. Dimovska[3], I. Vujicik Ivo[5], H. Minovska[6], N. Ivanovski[1], A. Vasilova[1], S. Tasevska Bogoeva[4]

[1]University Clinic of Nephrology, Skopje, N. Macedonia

[2]Phi Health Center Kratovo, Kratovo, N. Macedonia

[3]Institute of Public Health of The Republic of North Macedonia, Skopje, N. Macedonia

[4]University Clinic for Infectious Diseases and Febrile Conditions, Skopje, N. Macedonia

[5]University Clinic of Urology, Skopje, N. Macedonia

[6]Phi Clinic Hospital Bitola, Bitola, N. Macedonia

Assessment of microvascular lesions in kidneys with renal resistive index is preferred non-invasive method. The aim of this study was to introduce modern methods for assessing the arterial rigidity in patients with renal transplantation and thus reduce the risk of cardiovascular morbidity and mortality in this population.

28 kidney transplanted patients participated in our cross sectional study. We assessed them for pulse wave velocity, renal resistive index, ambulatory arterial stiffness index and pulse pressure. The data were statistically processed.

64.29% of the participants were men with average of 44.07 years old and average BMI of 25.29 kg/m^2. The average graft duration was 82.2 months, Average pulse wave velocity was 6.64 ± 1.18 m/sec., ambulatory arterial stiffness index varied in the interval 0.36 ± 0.15 and the average renal resistive index of the graft's main renal artery was 0.66 ± 0.08. Average pulse pressure varied in the interval 52.21 ± 8.96 mmHg.

PWV was significantly higher (7.28m/sec.) in patients with longer graft duration vs patients with shorter graft duration (6.08m/sec.) for p=0,006.

In conclusion, RRI and PWV represent useful tools for cardiovascular risk assessment although we are still not aware of all the factors that influence this relationship. More research studies are needed in that direction involving a larger number of respondents with sufficient long follow-up period.

CHARACTERISTICS OF PATIENTS ON THE WAITING LIST FOR KIDNEY TRANSPLANTATION

A. Zolota, E. Kasimatis, G. Myserlis, E. Sampani, G. Katsanos, N. Antoniadis, G. Tsakiris, A. Kofinas, S. Vasileiadoy, K.E. Karakasi, S. Neiros, G. Tsoulfas, A. Papagianni

Renal Transplant Unit, School of Medicine, Aristotle University of Thessaloniki, General Hospital "Hippokratio", Greece

Introduction: Kidney transplantation is the preferred option for patients with end-stage CKD, but remaining for long on the list for a deceased donor graft impairs their eligibility for transplantation. This study aims to analyze the characteristics of patients on the list that are likely to affect the prognosis of kidney transplantation.

Material – method: The study included 405 patients (263 men, age 44±12 years) who were enrolled on the waiting list for a deceased donor kidney graft. Their length of stay on dialysis, primary disease, body mass index (BMI), cardiovascular morbidity, and the frequency of temporary exclusion from the list were assessed.

Results: The median length of patients' dialysis vintage was 7 years. A percentage of 13.8% of them were candidates for kidney retransplantation while 13.3% were hypersensitized. Regarding the primary disease, the cause of nephropathy was unknown in a large group of patients (30.1%). Overweight and obese were recorded in 28.4% and 8.1% of the patients on the list, respectively. The main cause of cardiac comorbidity was coronary artery disease in 9.5% of the patients while 9.4% of them also had peripheral vascular disease. During their stay on the list, 12.6% of patients had to be temporarily excluded from it, for a period of up to 5 years, with the most frequent reason being coronary angioplasty.

Conclusions: Long-term stay on the waiting list before receiving a kidney graft, and patients' cardiovascular comorbidity should be considered in their scheduled reassessment.

13 LONGITUDINAL ANALYSIS OF PERIPHERAL BLOOD IMMUNE CELL SUBSETS IN KIDNEY TRANSPLANT RECIPIENTS AND CLINICAL CORRELATIONS – A PROSPECTIVE STUDY

A. Duni[1,2], A. Kitsos[1,2], G. Markopoulos[3], V. Koutlas[2], E. Tzalavra[2], V. Tatsis[2], J. Alekos[1], L. Gkika[1], G. Baxevanos[3], H. Pappas[1,2], G. Vartholomatos[3], M. Mitsis[2], E. Dounousi[1,2]

[1]University Hospital of Ioannina, Department of Nephrology, Greece

[2]University Hospital of Ioannina, Department of Surgery and Kidney Transplant Unit, Greece

[3]University Hospital of Ioannina, Laboratory of Haematology - Unit of Molecular Biology, Greece

Introduction: The aim of our study was a longitudinal analysis of immune cell subtypes in the peripheral blood of KTRs and potential clinical correlations.

Materials & Method: 40 KTRs (mean age 58 ±9.28 years, 26 males, 17 patients on cyclosporine and 23 patients on tacrolimus) were enrolled in this observational, prospective study. Patients were prospectively followed for 12 months. Exclusion criteria were history of acute rejection, cardiovascular disease (CVD), malignancy, autoimmunity and active or chronic infections before study enrolment or during follow-up. The peripheral blood immune cell subsets CD14++CD16, CD14++CD16+ and CD14+CD16++ monocytes, natural killer (NK) cells (CD3+CD16+56+), CD3-CD19+ B lymphocytes, CD3+ CD4+ T cells, CD3+CD8+ T cells and Tregs (CD4+CD25+ FoxP3+) were measured by flow cytometry at baseline (T0) and after 12 months (T1). Clinical and laboratory parameters were recorded at T0 and T1.

Results: During follow up, the mean eGFR (CKD-EPI) declined from 58 ±17 to 53 ±18ml/min/1.73 m2 (p= 0.004). There was a decrease in total monocytes (648±241/μL versus 537 ±194/μL, p=0.01) and total lymphocytes (2115 ±127/μL versus 1925±724/μL, p=0.04). The classical CD14++CD16- monocytes increased at T1 (533±224/μL) compared to T0 (451±185/μL) (p=0.04). A larger increase of the intermediate CD14++CD16+ monocytes from T0 to T1 correlated with greater eGFR decline (ρ = -0.339, p=0.04). No significant changes were observed in spot urine protein to creatinine ratio, inflammatory markers (CRP, ESR) or calcineurin inhibitors blood levels between T0 and T1.

Conclusions: Increased yearly graft function loss might be associated with more marked augmentation of the pro-inflammatory CD14++CD16+monocytes counts.

CIRCULATING IMMUNE CELL SUBSETS CORRELATE WITH CONVENTIONAL AND NOVEL DEFORMATION RELATED INDICES OF LEFT VENTRICULAR FUNCTION IN KIDNEY TRANSPLANT RECIPIENTS WITH NO ESTABLISHED CARDIOVASCULAR DISEASE

A. Duni[1,2], L. Lakkas[3], G. Markopoulos[4], A. Bechlioulis[3], V. Koutlas[2], E. Tzalavra[2], V. Tatsis[2], I. Theodorou[1], H. Pappas[1,2], G. Vartholomatos[4], M. Mitsis[2], K. Naka[4], E. Dounousi[1,2]

[1]*University Hospital of Ioannina, Department of Nephrology, Greece*

[2]*University Hospital of Ioannina, Department of Surgery and Kidney Transplant Unit, Greece*

[3]*Second Department of Cardiology and Michaelidion Cardiac Center, Greece*

[4]*University Hospital of Ioannina, Laboratory of Haematology - Unit of Molecular Biology Greece*

Introduction: The relationship between immune system responses with heart failure is intricate. The aim of our cross-sectional study was to investigate correlations between blood levels of specific immune cells subsets with conventional and novel deformation indices of left ventricular (LV) function in kidney transplant recipients (KTRs).

Material & Method: 31 KTRs (mean age 58 ±9.28 years, 67% males) without CVD and 17 chronic kidney disease (CKD) stage 3 patients without CVD were enrolled. The peripheral blood immune cells, including CD14++CD16-, CD14++CD16+ and CD14+CD16++ monocytes, natural killer (NK) cells (CD3+CD16+56+), CD3-CD19+ B cells, CD3+CD4+ T cells, CD3+CD8+ T cells and T regulatory (Tregs) cells (CD4+CD25+ FoxP3+) were measured by flow cytometry. Classical and novel left ventricular deformation indices were assessed by echocardiography.

Results: KTRs had a mean eGFR 58 +/-18 ml/min/1.73 m2 (CKD-EPI) and mean 24-hour proteinuria (PER) 707 +/-1185 mg/24h. B-cells, T-cells and CD8+ T cells counts correlated positively with eGFR ($p<0.05$). Increased non-classical CD14+CD16++ monocytes were associated with PER ($p <0.01$). KTRs displayed increased classical monocytes ($p<0.01$) and decreased nonclassical monocytes ($p<0.01$), NK cells ($p< 0.05$) and Tregs ($p<0.01$) compared to CKD patients. An inverse correlation was found between classical CD14++CD16- monocytes and PER ($p<0.05$). Increased monocytes and pro-inflammatory CD14++CD16+ monocytes count correlated positively with left atrial volume index and E/E' respectively ($p<0.05$). Increased NK cells levels were associated with more negative global circumferential strain values ($p<0.05$).

15 PATIENTS WITH DIABETIC NEPHROPATHY ON THE WAITING LIST FOR KIDNEY TRANSPLANTATION

A. Zolota, E. Kasimatis, E. Sampani, G. Myserlis, G. Katsanos, N. Antoniadis, A. Kofinas, G. Tsakiris, S. Vasileiadou, K.E. Karakasi, S. Neiros, G. Tsoulfas, A. Papagianni

Renal Transplant Unit, School of Medicine, Aristotle University of Thessaloniki, General Hospital "Hippokratio", Greece

Introduction: Diabetic Nephropathy is caused by Type 1 (T1DM) or Type 2 (T2DM) Diabetes Mellitus. Our purpose is to record the comorbidity of patients with diabetic nephropathy on the waiting list for a deceased-donor kidney transplant.

Methods: Out of the total 405 prospective kidney recipients on the list, two groups of patients were studied, 22 of whom with T1DM (17 men, age 62±11 years) and 29 with T2DM (20 men, age 63±12 years) respectively. Their length of stay on dialysis, body mass index (BMI), cardiovascular morbidity, and diabetic retinopathy were assessed. Moreover, the causes of the temporary exclusion from the list were recorded, along with the indication for combined kidney and pancreas transplants.

Results: The median time spent on dialysis was 8 years, with no difference between the two groups. Temporary exclusion was recorded in 31.8% of patients with T1DM and 41.4% with T2DM. The criteria for combined kidney and pancreas transplant were met by 10% of the patients, with the percentage of patients with T1DM (13.6%) being higher than those with T2DM (6.9%). The majority of the diabetic patients (59%) were obese. Diabetic retinopathy was recorded in 88% of the patients and cardiovascular disease in 53%, with no difference between the two groups.

Conclusions: Despite the significant cardiovascular comorbidity, patients with T1DM and T2DM remain on the list for a deceased-donor transplant for a long period of time, with significant percentages of temporary exclusion while the advantages of kidney transplant and the one combined with pancreas are not exploited.

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COMPARISON BETWEEN BERDEN AND ANCA RISK SCORE CLASSIFICATION MODELS REGARDING THEIR ABILITY TO PREDICT SHORT AND LONG TERM OUTCOME OF ANCA-ASSOCIATED GLOMERULONEPHRITIS

M. Christodoulou[1], E. Moysidou[1], G. Lioulios[1], S. Stai[1], K. Bandis[1], N. Flaris[2], C. Nikolaidou[2], A. Fylaktou[3], A. Papagianni[1], P. Sarafidis[1], M. Stangou[1]

[1]*School of Medicine, Aristotle University of Thessaloniki, Department of Nephrology, Hippokration Hospital, Thessaloniki, Greece*

[2]*Department of Pathology, Hippokration General Hospital, Thessaloniki, Greece*

[3]*Department of Immunology, National Histocompatibility Center, Hippokration General Hospital, Thessaloniki, Greece*

Introduction: Diabetic Nephropathy is caused by Type 1 (T1DM) or Type 2 (T2DM) Diabetes Mellitus. Our purpose is to record the comorbidity of patients with diabetic nephropathy on the waiting list for a deceased-donor kidney transplant.

Methods: Out of the total 405 prospective kidney recipients on the list, two groups of patients were studied, 22 of whom with T1DM (17 men, age 62±11 years) and 29 with T2DM (20 men, age 63±12 years) respectively. Their length of stay on dialysis, body mass index (BMI), cardiovascular morbidity, and diabetic retinopathy were assessed. Moreover, the causes of the temporary exclusion from the list were recorded, along with the indication for combined kidney and pancreas transplants.

Results: The median time spent on dialysis was 8 years, with no difference between the two groups. Temporary exclusion was recorded in 31.8% of patients with T1DM and 41.4% with T2DM. The criteria for combined kidney and pancreas transplant were met by 10% of the patients, with the percentage of patients with T1DM (13.6%) being higher than those with T2DM (6.9%). The majority of the diabetic patients (59%) were obese. Diabetic retinopathy was recorded in 88% of the patients and cardiovascular disease in 53%, with no difference between the two groups.

Conclusions: Despite the significant cardiovascular comorbidity, patients with T1DM and T2DM remain on the list for a deceased-donor transplant for a long period of time, with significant percentages of temporary exclusion while the advantages of kidney transplant and the one combined with pancreas are not exploited.

17 BEDSIDE MICROSCOPY FOR ADEQUACY ASSESSMENT OF NON-SURGICAL RENAL BIOPSIES

P. Pateinakis[1], P. Kyriklidou[1], E. Manou[1], S. Panagakou[1], A. Karras[1], S. Pervana[2], D. Papadopoulou[1]

[1]Department of Nephrology and [2]Department of Pathology, General Hospital "Papageorgiou", Thessaloniki, Greece

Introduction: Renal biopsy is indispensable for the diagnosis of glomerular diseases. Its adequacy is determined by the presence of glomeruli in the biopsy sample. Biopsy cores obtained with a tru cut needle under ultrasound or CT guidance may not contain glomeruli and thus be non-diagnostic. Adequacy assessment of the biopsy core through identification of sufficient number glomeruli by bedside microscopy or stereoscopy allows for optimal utilisation of this invasive procedure, improving the benefit to hazard ratio in favour of the patient.

Material & Method: 285 non-surgical renal biopsies of a single centre (260 with bedside adequacy assessment and 25 without) were evaluated. Assessment was done under a microscope, with the biopsy core on filter paper soaked in normal saline and placed in a transparent Petri dish, using a X10 objective lens and X10 eyepiece lens (total magnification X100).

Results: Diagnostic adequacy was 99.2% (258/260) with bedside assessment and 88% (22/25) without (p: 0.000). Patient's inability to cooperate during the biopsy and morbid obesity were the causes of inadequacy in the 2 cases with bedside assessment. In another case, after sampling of enteric tissue along with the second renal core was identified, no other passes were attempted, with adequate renal tissue sampled and without clinical complications for the patient.

Conclusions: Bedside assessment of non-surgical renal biopsy samples was associated with significantly higher adequacy rates, thus maximizing the benefits of the procedure.

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THE EFFECT OF COVID-19 INFECTION ON ANTIBODY LEVELS IN VACCINATED PATIENTS ON HD: A CLINICAL STUDY

M. Sofra[1], P. Tseke[2], P.E. Andronikidi[1], V. Athanasiadou[1], D. Panokostas[1], E. Grapsa[1]

[1]*Aretaieion University Hospital, Nephrology Department, Athens, Greece*

[2]*Renal Unit, General Hospital Alexandra, University of Athens, Athens, Greece*

Introduction: People with chronic kidney disease are a highrisk population group for COVID-19 infection with high rates of hospitalization and mortality. Data on immunogenicity are limited. We studied the antibodies' title in patients vaccinated with at least two doses in association with COVID-19 infection.

Material & Method: Participants were recruited following any COVID-19 vaccine dose and have been blood sampled for serological testing at three measurements. Twelve people, five women and seven men, average age 71.2 ± 9.83 were included. There was no statistically significant difference in the mean age of men and women p=0.66 (female 69.6 ± 9.23 vs male 72.2 ± 10.8). Of them, eight (66.7%) were infected from SARS-COV2.

Results: A gradual increase in antibody levels was found in the three measurements and the difference was statistically significant (p=0.0091). Analyzing by time period a statistically significant difference was found between the first and second measurement (p=0.0124) as well as the first and third measurement (p=0.0048), but not between the second and third measurement (p=0.72). In the third measurement the antibody levels showed no statistically significant difference between those who got infected and those who didn't (p=0.73). No statistically significant difference was observed in any measurement period between men and women (first measurement p=0.29, second measurement p=0.32, third measurement p=0.46). No correlation of antibody levels with age was found.

Conclusions: Covid-19 infection in vaccinated patients under HD appears to have no effect on antibody levels. Furthermore, no increase in antibody levels was observed after the third dose.

19 MULTICENTER RETROSPECTIVE STUDY EVALUATING THE CLINICAL PICTURE AND OUTCOME OF THE SARS-COV2 INFECTION AMONG PATIENTS WITH GLOMERULAR DISEASES

S. Lionaki[1], S. Marinaki[2], K. Kantartzi[3], D. Galitsiou[4], G. Moustakas[4], E. Dounousi[5], I. Bellos[2], S. Flouda[6], D. Boumpas[6], V. Liakopoulos[7], V. Vaios[7], A. Sardeli[1], P. Kalogeropoulos[1], C. Mpintas[2], P. Giannakopoulos[1], L. Gkika-Zervou[5], M. Papasotiriou[8], D. Goumenos[8], A. Venetsanopoulou[9], P. Voulgari[9], E. Andronikidi[10], K. Stylianou[11], S. Panagoutsos[3], I.N. Boletis[2]

[1]Department of Nephrology, Attikon University Hospital, National and Kapodistrian University of Athens, Greece

[2]Nephrology and Transplantation clinic, Laiko Hospital, National and Kapodistrian University of Athens, Greece

[3]Department of Nephrology, University of Thrace, Alexandroupolis, Greece

[4]Department of Nephrology, Gennimatas Hospital, Athens, Greece

[5]Department of Nephrology, University of Ioannina, Greece

[6]Rheumatology and Clinical Immunology Unit, Attikon University Hospital, National and Kapodistrian University of Athens, Greece

[7]Division of Nephrology and Hypertension, 1st Department of Internal Medicine, AHEPA Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece

[8]Department of Nephrology and Renal Transplantation, Patras University Hospital, Patras, Greece

[9]Rheumatology Department, University of Ioannina, Ioannina, Greece

[10]Department of Nephrology, Aretaieio Hospital, National and Kapodistrian University of Athens, Athens, Greece

[11]Department of Nephrology, University Hospital of Heraklion, Heraklion, Greece

Aim: This is a retrospective study exploring the clinical picture and outcome of sars-cov2 infection in patients with glomerular diseases (GD) and its impact in the probability of relapse of the GD.

Material & Method: Patients with biopsy-proven GD, who had been infected by sars-cov2 were studied. Those who ended in ESKD prior to infection were excluded. We recorded demographics, histopathological diagnosis, past medical history, immunosuppressive regimens, status of GD at the time of infection, clinical picture and outcomes of the infection and the GD.

Results: 312 patients were included, of whom 214(68,5%) had a positive test for sars-cov2 during the follow up time, while 98 were not. Infected patients: were younger compared with those not infected [44 (28-59.75) vs. 53 (38-64) years, p<0.001], the mean time from the diagnostic biopsy to the sars-cov2 infection was 67,6(±59,3) months, 82,5% had been vaccinated against sars-cov2 and 49,1% were on immunosuppressive therapy at vaccination, 28(13%) required admission to hospital, lasting 8,3(±5,1) days, while 84,2% experienced complete recovery of the infection, 4(1,9%) died due to Covid-19 and 24(11%) had symptoms for more than 3 months. Among patients in remission for the GD, the frequency of the GD relapse was higher in infected patients versus those not infected (11.9% vs. 2.1 %, p=0.007).

Conclusions: According to our findings, the sars-cov2 infection appears to have a significant impact in patients with GD, related to morbidity and also by increasing the probability of relapse of the primary disease.

CLINICAL PICTURE AND OUTCOME OF SARS-COV2 INFECTION POST VACCINATION IN PATIENTS ON CHRONIC HEMODIALYSIS

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P. Nikolopoulos, K. Drouzas, I. Tsoumpou, D. Bacharaki, A. Sardeli, D. Petrou, P. Giannakopoulos, M. Karagiannis, E. Pantzopoulou, K. Giolas, S. Lionaki

Department of Nephrology, 2nd Propaedeutic Internal Medicine, Medical School, National and Kapodistrian University of Athens, Attikon University Hospital, Athens, Greece

Aim: Chronic hemodialysis (HD) patients are at increased risk for COVID-19 complications. The aim of this study was to investigate the impact of the 4th wave of the COVID-19 pandemic on HD patients.

Material & Methods: Clinical and laboratory data of HD patients diagnosed with sars-cov2 infection, history of vaccination, hospitalizations due to COVID-19 and outcomes were recorded and compared to the related data of a control group, of patients with chronic kidney disease stage 2-3 infected during the same period.

Results: Thirty HD patients, (27 males) with COVID-19 disease, aged 70±15.1 years, were studied. All were vaccinated with 3(±1) doses. The diagnosis of COVID-19 was established 18(±11.2) hours after the onset of symptoms, which included cough, fever and fatigue with an incidence of 87.1%, 90.3% and 90.3% respectively. It was followed by anosmia 58.06%, runny nose and sore throat 51.6%, anorexia 22.5%, diarrhea 3.3%. No patient required hospitalization, no death was recorded due to COVID-19, and no one reported long COVID-19 syndrome. Compared to the control group, HD patients had an earlier diagnosis: 18(±11.2) vs 29 (±12.7) hours, ($p<0.05$). No difference between HD patients and controls was revealed, regarding the clinical picture and outcome related to COVID-19.

Table 1. Comparison of laboratory measurements between HD patients and controls

CRP mg/L	11,3(±7,1)	12,4(±8,7)	ns
WBC K/μl(median)	6870	7688	ns
PMN%	58,4(±11,4)	60,2(±9,4)	ns
L%	21,7(±7,4)	20,7(±7,9)	ns
NLR	2,5(±1,1)	3.2(±2.1)	ns

Conclusions: The strategy of vaccination against sars-cov2 infection significantly improved the outcome of COVID-19 in HD patients.

21 CLINICAL PRESENTATION AND OUTCOMES OF SARS-COV2 INFECTION IN PATIENTS WITH LUPUS NEPHRITIS AND ITS POTENTIAL EFFECT IN THE PROBABILITY OF RELAPSE

A. Sardeli[1], P. Giannakopoulos[1], S. Flouda[2], S. Marinaki[3], K. Kantartzi[4], P. Kriki[4], A. Venetsanopoulou[5], P. Voulgari[5], P. Kalogeropoulos[1], D. Petrou[1], S. Panagoutsos[4], I. Michelakis[3], D.T. Boumpas[2], I.N. Boletis[3], S. Lionaki[1]

[1]*Department of Nephrology, 2nd Propaedeutic Internal Medicine, Medical School, National and Kapodistrian University of Athens, Attikon University Hospital, Athens, Greece*

[2]*Rheumatology and Clinical Immunology, Medical School, National and Kapodistrian University of Athens, Attikon University Hospital, Athens, Greece*

[3]*Department of Nephrology and Renal Transplantation, Medical School, National and Kapodistrian University of Athens, General Hospital of Athens Laiko, Athens, Greece*

[4]*Department of Nephrology, Medical School, Democritus University of Thrace, Alexandroupolis, Greece*

[5]*Rheumatology Clinic, Department of Internal Medicine, Medical School, University of Ioannina, Ioannina, Greece*

Aim: The present study is aiming to record the clinical presentation and outcome of SARS-CoV2 infection in patients with lupus nephritis (LN).

Material & Method: 82 patients with biopsy-proven LN were retrospectively studied. 56 (68.3%) had a positive test for SARS-CoV2, who were compared in terms of LN outcome with the remaining 26 who did not. Patients who had reached ESKD before infection were excluded. Biopsy data, treatment, outcome of LN, clinical presentation of SARS-CoV2 infection and outcome were recorded.

Results: The mean age of patients was 33 (±12.7) years and 85.3% were women. In the histopathological diagnosis there was proliferative LN in 43 (76.8%) cases. All patients had received immunosuppressive therapy and 89.2% had achieved remission of LN. 66.1% of patients were under immunosuppression at the time of SARS-CoV2 infection diagnosis. 94.6% of patients were tested due to symptoms and 5 (9.01%) of patients required hospitalization mainly due to hypoxemia. 11 (19.6%) of patients received specific treatment for SARS-CoV2 infection, 91.6% of patients had complete recovery, 2 (3.57%) prolonged symptomatology, and 1 (1,785%) died. 10.9% of patients with SARS-CoV2 infection, who were in remission before infection, experienced a relapse of LN 2.7(±2.1) months later, while none of the patients without SARS-CoV2 infection relapsed in the same time period (p=0.09).

Conclusion: SARS-CoV2 infection affects the morbidity of patients with SLE nephritis and possibly the likelihood of relapse in those who have achieved remission.

INCIDENCE OF ADVERSE EVENTS ASSOCIATED WITH SARS-COV2 VACCINATION IN PATIENTS WITH LUPUS NEPHRITIS AND ITS POTENTIAL EFFECT ON THE PROBABILITY OF DISEASE RELAPSE

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A. Sardeli[1], D. Petrou[1], S. Flouda[2], S. Marinaki[3], P. Kriki[4], K. Kantartzi[4], A. Venetsanopoulou[5], P. Voulgari[5], M. Karagiannis[1], P. Kalogeropoulos[1], S. Panagoutsos[4], D. Boumpas[2], I.N. Boletis[3], S. Lionaki[1]

[1]*Department of Nephrology, 2nd Propaedeutic Internal Medicine, Medical School, National and Kapodistrian University of Athens, Attikon University Hospital, Athens, Greece*

[2]*Rheumatology and Clinical Immunology, Medical School, National and Kapodistrian University of Athens, Attikon University Hospital, Athens, Greece*

[3]*Department of Nephrology and Renal Transplantation, Medical School, National and Kapodistrian University of Athens, General Hospital of Athens Laiko, Athens, Greece*

[4]*Department of Nephrology, Medical School, Democritus University of Thrace, Alexandroupolis, Greece*

[5]*Rheumatology Clinic, Department of Internal Medicine, Medical School, University of Ioannina, Ioannina, Greece*

Aim: The present study aims to investigate the incidence of adverse events associated with SARS-CoV-2 vaccination in patients with a history of lupus nephritis (LN).

Material & Method: Patients with biopsy-proven LN, who were vaccinated against SARS-CoV-2, were retrospectively studied. Patients who had reached ESKD before vaccination were excluded. The histopathological diagnosis of LN, immunosuppressive regimens, outcome as a result of treatment, timing, doses, adverse effects of the vaccine, and its potential effect on the clinical course of LN were recorded.

Results: The study included 90 patients with LN with a mean age of 31(±18) years, of which 72 (80%) were women. Proliferative LN was present in 68(77.2%) cases and 91.8% had achieved remission with treatment. 86.7% of patients were vaccinated with 3 (2.75, 3) doses. Median time from diagnosis to vaccination was 59(32-137) months and 70.5% of patients were receiving immunosuppression at the time of vaccination. 30.5% of patients reported systemic adverse reactions and 36.1% adverse reactions at the site of administration. Among patients in remission who were vaccinated, only 1 (1.2%) patient experienced a relapse of LN within 3 weeks of the 1st dose. Three (3.4%) patients who had treatment-resistant disease experienced a worsening of SLE activity after vaccine administration.

Conclusion: In this cohort of patients with a history of LN, the SARS-CoV-2 vaccine appears safe, with no effect on the likelihood of disease recurrence for patients who have achieved remission.

23 FREQUENCY OF ADVERSE EVENTS ASSOCIATED WITH THE SARS-COV2 VACCINATION AMONG PATIENTS WITH GLOMERULAR DISEASES

S. Lionaki[1], P. Kriki[2], S. Marinaki[3], D. Galitsiou[4], E. Dounousi[5], S. Flouda[6], I. Bellos[3], V. Liakopoulos[7], V. Vaios[7], A. Sardeli[1], Z. Kleinaki[3], D. Petrou[1], P. Kalogeropoulos[1], L. Gkika-Zervou[5], M. Papasotiriou[8], D. Goumenos[8], A. Venetsanopoulou[9], P. Voulgari[9], E. Grapsa[10], K. Stylianou[11], S. Panagoutsos[2], I.N. Boletis[3]

[1]Department of Nephrology, 2nd Propaedeutic Internal Medicine, Attikon University Hospital, National and Kapodistrian University of Athens, Greece

[2]Department of Nephrology, University of Thrace, Alexandroupolis, Greee

[3]Nephrology and Transplantation Clinic, Laiko Hospital, National and Kapodistrian University of Athens, Greece

[4]Department of Nephrology, Gennimatas Hospital, Athens, Greece

[5]Department of Nephrology, University of Ioannina, Greece

[6]Rheumatology and clinical immunology Unit, Attikon University Hospital, National and Kapodistrian University of Athens, Greece

[7]Division of Nephrology and Hypertension, 1st Department of Internal Medicine, AHEPA Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece

[8]Department of Nephrology and Renal Transplantation, Patras University Hospital, Patras, Greece

[9]Rheumatology Department, University of Ioannina, Ioannina, Greece

[10]Department of Nephrology, Aretaieio Hospital, National and Kapodistrian University of Athens, Athens, Greece

[11]Department of Nephrology, University Hospital of Heraklion, Heraklion, Greece

Aim: Development of sars-cov2 vaccination has altered the natural course of the related infection and the pandemic. The present study aims to explore the frequency of adverse events in patients with glomerular diseases (GD).

Material & Methods: Patients with biopsy-broven GD, who received at least one dose of the vaccine against sars-cov2 were studied retrospectively. Patients who ended up in ESKD prior to vaccination were excluded. We recorded demographics, histopathological diagnosis, past medical history, immunosuppressive regimens, outcome of the GD, adverse events associated with the vaccine as well as the frequency of relapse of the GD post vaccination.

Results: To date 280 patients with GD have been included in the study with a mean age of 47,6 (±17,8) years, of whom 111(39,6%) are males. Patients received in total 3,0 (±0,9) vaccine doses with the mean time from the diagnostic kidney biopsy to vaccination being 76,5(±61,5) months and 47,1% of the patients being on immunosuppressive therapy.27,1% of the patients reported systemic side effects and 50,7% reported local side effects. Renal function and 24-hour proteinuria remained stable after vaccination. Among patients who were in remission of the GD and were vaccinated 19(8,2%) patients experienced a relapse after vaccination, versus 5% for patients not vaccinated (p=0,99).

Conclusions: According to our findings the vaccine against sars-cov2 appears safe for patienst with GD with no impact in renal function or the probability for relapse.

LYMPHOCYTE SUBPOPULATIONS CAN PREDICT THE DEVELOPMENT OF ANTIBODIES AFTER VACCINATION AGAINST SARS-COV-2 IN HEMODIALYSIS PATIENTS AND KIDNEY TRANSPLANT RECIPIENTS

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I. Mallioras[1], C. Georgopoulos[1], A. Duni[1,2], G.S. Markopoulos[3], C. Pappas[1,2], E. Pappas[4], V. Koutlas[2], E. Tzalavra[2], G. Baxevanos[3,5], S. Priska[6], G. Katagis[7], K. Gartzonika[7], G. Vartholomatos[3], C. Milionis[8], E. Christaki[8], M.I. Mitsis[2], E. Dounousi[1,2,6]

[1]*Department of Nephrology, University Hospital of Ioannina, Greece*

[2]*Department of Surgery and Kidney Transplant Unit, University Hospital of Ioannina, Greece*

[3]*Laboratory of Hematology - Unit of Molecular Biology, University Hospital of Ioannina, Greece*

[4]*Renal Unit, General Hospital of Filiates, Greece*

[5]*Internal Medicine Department, Hatzikosta General Hospital of Ioannina, Greece*

[6]*Department of Nephrology, School of Medicine, University of Ioannina, Greece*

[7]*Microbiology Laboratory, Faculty of Medicine, School of Health Sciences, University of Ioannina, Greece*

[8]*Department of Internal Medicine, School of Medicine, University of Ioannina, Greece*

Background and Aims: Mortality due to SARS-COV-2 infection in hemodialysis (HD) patients and kidney transplant recipients (KTRs) is admittedly proved to be high. The aim of our study was to determine the predictive value of lymphocyte subpopulations in the production of antibodies against SARS-CoV-2 after the second dose of the vaccine.

Methods: The cohort of this prospective study (ClinicalTrials.gov, NCT04932876) included 34 HD patients and 54 KTRs who received two doses of the BNT162b2 (Pfizer–BioNTech). Lymphocyte subpopulations were analyzed by flow cytometry at three time points, before vaccination (T0), before the 2nd dose (T1), 2 weeks after the 2nd dose (T2). Titers >50 arbitrary units (AU)/ml were considered positive. A multiple linear regression model was applied, separately to the two subgroups of patients.

Results: The mean age of the kidney transplanted recipients was 58,5 years of age while of the HD patients was 68,5 years of age. The analysis of kidney transplant recipients revealed that the populations of CD19+, CD3+CD16+56+ and CD4+CD45RO can predict antibody formation (p-ANOVA<0.001) based on the multiple regression model: Ab= 4869+519*CD19-226*CD3+CD16+56-139*CD4+CD45RO. The analysis of HD patients revealed that the populations of CD19+, CD45RA+CD45RO, CD4/CD8, CD3-CD16+56+ and CD4+CD45RO can predict antibody formation (p-ANOVA<0.001) based on the multiple regression model: Ab=20267+835.3*CD19-286*CD45RA+CD45RO-375.2*CD4+CD45RO+851*CD4/CD8-187.3*CD3-CD16+56+.

The 2 regression models explain the variation of the dependent variable (Ab), according to the adjusted index, at a rate of 24% and 67% respectively.

Conclusions: Quantification of lymphocyte subpopulations by flow cytometry proves to have a significant prognostic value in the development of antibodies after vaccination against SARS-CoV-2. The above models can predict patients' response to vaccination based on specific lymphocyte subpopulations.

25 MULTICENTER STUDY TO EVALUATE THE IMPACT OF VACCINATION AGAINST SARS-COV-2 AND/OR COVID-19 IN THE CLINICAL COURSE OF PATIENTS WITH IGA NEPHROPATHY

P. Kalogeropoulos[1], S. Marinaki[2], D. Gkalitsiou[3], C. Skalioti[2], P. Kriki[4], K. Kantartz[4], G. Moustakas[3], M. Papasotiriou[5], M. Karagiannis[1], M.-E. Agoranou[1], E. Grapsa[6], P. Nikolopoulos[1], S. Panagoutsos[4], I.N. Boletis[2], D. Goumenos[5], S. Lionaki[1]

[1]*Department of Nephrology, 2nd Propaedeutic Internal Medicine, "Attikon" University Hospital, Medical School, National and Kapodistrian University of Athens, Athens, Greece*

[2]*National and Kapodistrian University of Athens Medical School, Laiko General Hospital, Department of Nephrology and Renal Transplantation, Athens, Greece*

[3]*General Hospital of Athens "G. Gennimatas", Athens, Greece*

[4]*Department of Nephrology, Medical School, Democritus University of Thrace, Alexandroupolis, Greece*

[5]*University Hospital of Patras, Department of Nephrology and Kidney Transplantation, Patras, Greece*

[6]*Aretaieion University Hospital, Nephrology Department, Athens, Greece*

Aim: To investigate the impact, if any, of vaccination against SARS-CoV-2 and/or COVID-19 in disease course of patients with IgA nephropathy (IgAN).

Material & Method: This is a retrospective study which included patients with biopsy proven IgAN, who received at least one dose of the vaccine against the SARS-CoV-2 or were infected or both. Patients who had developed ESKD prior to vaccination or infection were excluded. Adverse effects of vaccination, doses administered, immunosuppressive therapy and outcome of glomerular disease, clinical picture of infection, need for hospitalization and outcome of infection were recorded.

Results: 51 IgAN patients with a mean (SD) age of 46.5 (±16.58) years and a mean (SD) time since diagnosis of 80.27 (±71.5) months were included, of whom 30 (58.8%) were male. 41 (80.4%) patients were vaccinated within 65.9 (±77.7) months from the diagnostic kidney biopsy with 3 (±0.75) doses, while 19.8% of patients were on immunosuppressive therapy at the time of vaccination. 14.6% of patients reported systemic and 26.8% local side effects from vaccination. In total, 37 (72.5%) patients were infected of which 72.9% had been vaccinated. 85.3% of patients had symptoms at the time of viral testing. One patient required hospitalization, and all had complete recovery. One patient (2.7%) experienced recurrence of IgAN which occurred 3.5 months after SARS-CoV-2 infection.

Conclusions: According to our results vaccination against SARS-CoV-2 appears safe for patients with IgAN. The majority of patients who were infected had an uncomplicated outcome.

MULTICENTER STUDY TO EVALUATE THE FREQUENCY OF ADVERSE REACTIONS ASSOCIATED WITH VACCINATION AGAINST SARS-COV-2 IN PATIENTS WITH PODOCYTOPATHIES

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P. Kalogeropoulos[1], M. Papasotiriou[2], E. Ntounousi[3], S. Marinaki[4], P. Kriki[5], D. Gkalitsiou[6], G. Moustakas[6], V. Liakopoulos[7], V. Vaios[7], L. Gkika-Zervou[3], E. Andronikidi[8], M. Karagiannis[9], M.-E. Agoranou[1], P. Giannakopoulos[1], K. Stylianou[10], S. Panagoutsos[5], I.N. Boletis[4], D. Goumenos[2], S. Lionaki[1]

[1]*Department of Nephrology, 2nd Propaedeutic Internal Medicine, "Attikon" University Hospital, Medical School, National and Kapodistrian University of Athens, Athens, Greece*

[2]*University Hospital of Patras, Department of Nephrology and Kidney Transplantation, Patras, Greece*

[3]*Department of Nephrology, University Hospital of Ioannina, Ioannina, Greece*

[4]*National and Kapodistrian University of Athens Medical School, Laiko General Hospital, Department of Nephrology and Renal Transplantation, Athens, Greece*

[5]*Department of Nephrology, Medical School, Democritus University of Thrace, Alexandroupolis, Greece*

[6]*General Hospital of Athens "G. Gennimatas", Athens, Greece*

[7]*Division of Nephrology and Hypertension, 1st Department of Internal Medicine, School of Medicine, Aristotle University of Thessaloniki, AHEPA Hospital, Thessaloniki, Greece*

[8]*Aretaieion University Hospital, Nephrology Department, Athens, Greece*

[9]*Department of Nephrology, 2nd Propaedeutic Internal Medicine, "Attikon" University Hospital, Medical School, National and Kapodistrian University of Athens, Athens, Greece*

[10]*University General Hospital of Heraklion, Nephrology, Heraklion, Greece*

AIM: To investigate the impact, if any, of vaccination against the SARS-CoV-2 in the clinical course of patients with biopsy proven podocytopathies.

Material & Method: This is a retrospective study of patients with histologically proven minimal change disease (MCD) or focal segmental glomerulosclerosis (FSGS), who received at least one dose of vaccine against SARS-CoV-2 or had infected or both. Patients who had developed ESKD prior to vaccine or infection were excluded. The adverse reactions, the doses administered, the immunosuppressive therapy and its possible effect on the clinical course of the podocytopathy were recorded.

Results: 77 patients were included with a mean age of 46.1 (±17.8) years, of whom 38 (49.3%) were males. 68 (88.3%) patients received immunosuppression at diagnosis and 80.5% achieved remission. 87% of patients were vaccinated against SARS-CoV-2 with a mean time of 69.2 (±75.8) months from kidney biopsy with 2.9 (±0.76) doses. 37.3% of patients were under immunosuppressive therapy. 25.3% of patients reported systemic and 31.8% local adverse events from vaccination. Among patients who had achieved disease remission at the time of the 1st dose of vaccine, 10.4% had experienced a relapse of the nephrotic syndrome at 3.5 (±2.7) months post-vaccine. Among relapsers, 5 (71.4%) had MCD.

Conclusions: Patients with podocytopathies in this cohort had a good vaccine safety profile. Among patients who had archived remission 7 (10.4%) experienced a relapse of the primary disease after vaccination.

27 THE COVID-19 INFECTION IN PATIENTS ON HEMODIALYSIS: SINGLE CENTER STUDY

V. Karanfilovski[1], Z. Sterjova-Markovska[1], A. Spasovska Vasilova[1,2], N. Gjorgjievski[1,2], M. Milenkova[1,2], A. Canevska Taneska[1,2], I. Nikolov[1,2], S. Pavleska Kuzmanoska[1,2], P. Dzekova-Vidimliski[1,2], G. Severova[1,2], L. Trajceska[1,2], I. Rambabova-Bushljetik[1,2]

[1]*University Clinic of Nephrology, Skopje, Republic of N. Macedonia*

[2]*Medical Faculty Skopje, Un. Ss Cyril and Methodius, Skopje, Republic of N. Macedonia*

Background: Hemodialysis (HD) patients are at higher risk of infections including COVID-19 due to compromised immune status. Many studies reported higher COVID-19-related mortality rate among HD patients compared to the general population.

Methods: The retrospective, observational, single-center study included 71 patients on maintenance hemodialysis (MHD) with COVID-19 infection hospitalized and treated in the COVID unit at the University Hospital of Nephrology in Skopje from November 2020 to February 2022. The medical histories were used to collect data for demographic characteristics, laboratory parameters, treatment, and outcomes of the patients.

Results: The mean age of patients was 66.9±11.3 years with a mean HD vintage of 57.4±62.8 months and 54.9% were of male gender. Hypertension and diabetes were the most common etiology of kidney failure (KF) (28.2% and 19.7%, respectively). The mean period from a positive COVID-19 test to hospitalization in the COVID unit was 5.7±5.8 days. The mean hospital duration in the COVID unit was 9.8 ± 5.8 days. On admission, 83.1% of HD patients were on oxygen therapy (mean O_2 saturation 87.9±9.4%), and 15.5% were not on oxygen therapy (mean O_2 saturation 92±6.4%). From comorbidities, 50.7% of HD patients had hypertension, 47.9% had cardiovascular diseases, 8.5% had diabetes, 29.6% had gastrointestinal disorders, 15.5% had malignancy, and 70.4% had KF plus 2 other comorbidities. All patients were treated with antibiotics, 83.1% received oxygen therapy, and 85.9% received corticosteroids. A total of 29 patients (40.8%) died. The mean age of deceased patients was 69.6±12.5 years with mean hospital duration of 7.6 ± 6.6 days. The serum level of albumin on 1st and 5th hospital days was significantly lower in deceased patients compared to living patients. The need for oxygen therapy and the serum level of lactate dehydrogenase (LDH) on the 1st and 5th day was significantly higher in deceased patients compared to living patients. The level of D-dimers on 1st day was significantly higher in deceased patients compared to living patients. The serum level of creatine kinase (CK) and C-reactive protein (CRP) on the 5th day were significantly higher in deceased patients compared to living patients. The serum level of LDH on the 5th day was the only independent predictor associated with mortality in HD patients with COVID-19 infection ($p<0.009$).

Conclusion: The need for oxygen therapy, low albumin levels, and high LDH, D-dimer, CK, and CRP levels were associated with the outcome of HD patients with COVID-19 infection, but only LDH level on the 5th day was the independent predictor associated with mortality.

THE IMPACT OF CORONAVIRUS DISEASE -19 (COVID-19) ON KIDNEY TRANSPLANT FUNCTION

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G. Severova-Andreevska, A. Canevska-Taneska, M. Janeku-Kartalov, P. Dzekova-Vidimliski, M. Milenkova, A. Spasovska, N. Gjorgjievski, V. Pushevski, I. Nikolov, A. Severova-Stojanovska, Z. Janevski, L. Trajceska, I. Rambabova-Bushletik, G. Spasovski

Clinical Center "Mother Theresa", UC of Nephrology, Skopje, N. Macedonia

During the past 3 years, in the context of a pandemic caused by SARS CoV-2, the treatment and follow-up of the patients with transplanted kidney has been a great challenge. Especially from the aspect, that this population is with at increased risk of any type of infection. The infection with viruses can cause not only acute deterioration, but also chronic damage to the transplanted kidney. Our aim was to see how (COVID-19 affects the function of the transplanted kidney 1 year later.

Material and methods: In the period from March 2020 to March 2022, patients with transplanted kidney, positive PCR for SARS CoV-2 and accompanying symptoms of mild, moderate and severe form of COVID-19 were included. Followed for one year, with standard laboratory tests. Renal function was evaluated by monitoring of serum creatinine, calculating glomerular filtration rate (GFR) with CKD epi equation and proteinuria (qualitatively and quantitatively), at baseline (before COVID-19) and one year later.

Results: From a total of 64 patients, with a mean age of 44±1.4, 13 (20%) died. Compared to survivors, decedents had higher baseline serum creatinine (173 v.s. 143; p= 0.04). Regarding graft function, we observed a significantly higher serum creatinine at 1 year after the disease (161 vs. 143; p = 0.039) and a slight decrease in GFR (57 v.s. 56; p = 0.29), respectively. The percentage of patients who developed proteinuria after one year also increased (29% v.s. 34%).

Conclusion: COVID-19 affects graft function. Further follow-up at 3 and 5 years is needed for more precise results.

29 PATTERNS OF INTRADIALYTIC HYPOTENSION - CLINICAL ASSOCIATIONS

I. Grosu[1], F. Bob[1], O. Schiller[2], A. Schiller[1]

[1]*Nephrology Department, "Victor Babes" University of Medicine and Pharmacy, Timisoara, Romania*

[2]*B. Braun Hemodialysis Center, Timisoara, Romania*

Introduction: Intradialytic hypotension (IDH) is one of the most common complications in patients treated with chronic hemodialysis (HD). Its clinical consequences include cardiac stunning and cerebral hypoperfusion, arteriovenous fistula thrombosis and overall greater mortality. The factors involved in IDH occurrence are complex, related to dialysis prescription factors, but also comorbid conditions. The current study aims to identify associations between IDH occurrence patterns and clinical or dialysis-related factors.

Material and Methods: The present single-center observational study enrolled 131 HD patients, and a total 1572 dialysis sessions were recorded. We used the KDOQI definition for IDH (decrease in systolic blood pressure by ≥20 mm Hg or a decrease in MAP by 10 mm Hg associated with symptoms), and a minimum of 4 blood pressure recordings per HD session. We recorded demographic factors, comorbidities, Subjective Global Assessment scale (SGA), dialysis prescription, residual diuresis. We also assessed hemoglobin, plasma albumin, ferritin, PTH, calcium, phosphorus, C-reactive protein (CRP). MedCalc version 20 was used for the statistical analysis.

Results: In the present study, the prevalence of IDH was 18%, with 70% of patients developing at least one episode of blood pressure drop. We found that patients with IDH in the first half of the HD session had significantly higher ferritin levels (p=0,004), as well as SGA levels (p=0,004). Patients developing IDH in the second half of the HD session had a lower residual diuresis (p= 0,006) and a significantly higher ultrafiltration rate (p=0,01).

Conclusions: IDH patterns have different clinical associations, and patients developing early IDH may present with a poorer nutritional status, which highlights the need for a personalized clinical approach.

FACTORS AFFECTING MORTALITY WITHIN 6 MONTHS OF HEMODIALYSIS PATIENTS

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E. Lipo[1], N. Pasko[2]
[1]*Regional Hospital of Korca, Albania*
[2]*Mother Teresa Hospital Tirana, Albania*

Introduction: Patients with chronic renal disease in hemodialysis have increased in number in recent years in Albania. Despite modern technology and medicines, mortality on dialysis continues to be high. The aim of this study is to determine the factors that do or do not influence the mortality of hemodialysis patients over 6 month period.

Material and method: The study was conducted with 118 hemodialysis patients in Korca City Albania. The patients were followed up for up to 6 months. Clinical and laboratory data were collected for each patient, as well as cases exited the following 6 months were recorded. Logistic regression was used to correlate mortality within 6 months and the influencing factors.

Results: The average age of the study group was 55.1 ± 12.4 SD. Out of 118 patients included in this study there were 45 female patients and 73 males. 10 patients died within 6 months of the start of the study. There was a significant correlation between mortality within 6 months and hemoglobin levels p=0.001 and there was a significant correlation between mortality within 6 months and albumin level p=0.002 Statistical analysis revealed that lower values of hemoglobin and albumin increased the likelihood of mortality in the following 6 months. There was no statistically significant association between mortality and gender or calcium level.

Conclusions: Our study showed that low values of hemoglobin and albumin are statistically significant predictors of mortality within 6 months in hemodialysis patients.

31 CIRCULATING KIDNEY INJURY MOLECULE-1 AND CHRONIC INFLAMMATION AS RISK FACTORS OF MORTALITY IN HEMODIALYSIS PATIENTS

A. Sircuta[1], F. Bob[1,2], A. Schiller[1,2], L. Petrica[1,2], O. Schiller[3], M. Bodea[1,2], I. Goleț[4]

[1]*Dept. of Internal Medicine II – Division of Nephrology, "Victor Babeș" University of Medicine and Pharmacy Timisoara, Romania, Eftimie Murgu Sq. no. 2, 300041 Timișoara, RO; County Emergency Hospital Timisoara, Romania*

[2]*Centre for Molecular Research in Nephrology and Vascular Disease, Faculty of Medicine, "Victor Babeș" University of Medicine and Pharmacy, Timișoara, Romania Eftimie Murgu Sq. no. 2, 300041 Timișoara, Romania*

[3]*B. Braun Avitum Dialysis Center Timisoara, Romania*

[4]*FEAA, Dept. of Management, University "Vest" Timisoara, Romania*

Objective: Hemodialysis patients are known to be susceptible to a wide range of early and long-term complications such as chronic inflammation, infections, malnutrition that significantly affect the incidence of mortality. The aim of this study is to assess the level of plasma Kidney Injury Molecule- 1 (KIM-1) and chronic inflammation as risk factors of mortality.

Material and Method: We conducted a single-center study that included 63 CKD G5D patients (hemodialysis for 1-5 years) followed up for 48 months. All patients have been assessed at baseline, regarding cardiovascular disease (medical history, echocardiography and ECG), we performed using standard methods blood biochemistry, and markers of inflammation (CRP, IL-6) and markers of anemia (complete blood count, serum ferritin, transferrin saturation- TSAT).

Results: Mean plasma KIM1 levels were 267.1 +/-482.9 pg/ml, and showed a statistically significant correlation with mean CRP (r=0.28, p=0.02) and IL6 (r=0.36, p=0.005). After 24 months of follow up we found a mortality rate of 22.23%, while after 48 months the mortality rate was of 50.73%. Using a Cox proportion-hazards regression analysis of predicting factors of mortality we found some cut-off values associated to a significantly lower survival: IL-6 >9.8 (p=0.079), CRP >1.22 mg/dl (p= 0.093), ferritin>1360 (p=0.063), TSAT >35 (p=0.038), Hg>11g.dl (p=0.002), albumin <4.04 (p=0.01), KIM-1<81.98 (p<0.001)

Conclusions: In our study, increased inflammation in hemodialysis patients was associated to a significantly higher risk of mortality. Surprisingly low levels of the marker of tubular injury (KIM1) were associated with cardiovascular changes and also to an increased risk of mortality.

ASSOCIATION OF HIPPURIC ACID, INDOXYL SULFATE AND P-CRESYL SULFATE WITH AGE-RELATED LYMPHOCYTE CHANGES IN PATIENTS ON HEMODIALYSIS

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T. Tourountzis[1*], G. Lioulios[2*], S. Van Laecke[3], M. Christodoulou[2], E. Moysidou[2], S. Stai[2], A. Fylaktou[4], G. Glorieux[3], M. Stangou[2]

[1]*Protypo Dialysis Center of Thessaloniki, Thessaloniki, Greece*

[2]*Department of Nephrology, Hippokration Hospital, School of Medicine, Aristotle University of Thessaloniki, Thessaloniki, Greece*

[3]*Department of Internal Medicine and Pediatrics, Nephrology unit, Ghent University Hospital, Gent, Belgium*

[4]*Department of Immunology, National Peripheral Histocompatibility Center, Hippokration Hospital, Thessaloniki, Greece*

*These authors contributed equally to this work.

Introduction: Alterations of lymphocyte phenotype are depicted in patients on hemodialysis (HD). Accumulation of protein bound uremic toxins (PBUT) promotes dysregulation of immune system. We evaluated the association between hippuric acid (HA), indoxyl sulfate (IxS) and p-cresyl sulfate (pCS) accumulation and lymphocyte alterations.

Material & Method: In the peripheral blood of 54 patients on HD and 31 healthy controls, plasma levels of PBUT (HA, IxS, pCS) were quantified by ultra-performance liquid chromatography. Lymphocyte surface molecules of T and B cells were analyzed by flow cytometry.

Results: A higher concentration of total and free levels of PBUT was noticed in patients on HD, in comparison to healthy individuals ($p<0.001$). Naïve and less differentiated T cells correlated with total and free HA levels: CD4+CD45RA+CD57- ($r=-0.3$, $p=0.03$, $r=-0.3$, $p=0.02$ respectively), CD4+CD28+CD57- ($r=-0.3$, $p=0.05$, $r=-0.3$, $p=0.03$ respectively), CD8+CD28+CD57- ($r=-0.3$, $p=0.01$, $r=-0.3$, $p=0.01$ respectively). Exhausted CD4 lymphocytes related with total and free pCS ($r=0.3$, $p=0.02$, $r=0.3$, $p=0.01$ respectively) and further divided, CD4+CD45RA+PD1+, with total and free pCS ($r=0.3$, $p=0.04$, $r=0.3$, $p=0.045$ respectively). Naïve and non-switched memory B cells had negative relation with PBUT: CD19+IgD+CD27- with total HA ($r=-0.3$, $p=0.04$), free HA ($r=-0.3$, $p=0.03$), free IxS ($r=-0.3$, $p=0.01$) and CD19+IgD+CD27+ with free IxS ($r=-0.3$, $p=0.01$). Multivariate analysis showed that age and IxS had independent role in the reduction of CD4 and B lymphocytes and their naïve and early differentiated subsets. PCS was the leading co-efficient related with exhausted CD4+PD1+ cells.

Conclusions: HA and IxS correlated with immunosenescent and pCS with immuneexhausted changes in patients on HD.

33 ACCURACY OF FIXED 24-H AMBULATORY BLOOD PRESSURE RECORDINGS FOR DIAGNOSING HIGH 48-H AMBULATORY BLOOD PRESSURE IN HEMODIALYSIS PATIENTS

M. Theodorakopoulou[1], F. Iatridi[1], A. Georgiou[1], A. Karagiannidis[1], E. Pella[1], A. Karpetas[2], E. Sampani[1], E. Karkamani[1], A. Papagianni[1], P. Sarafidis[1]

[1]*First Department of Nephrology, Hippokration Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece*

[2]*Therapeutiki Hemodialysis Unit, Thessaloniki, Greece*

Objective: Hypertension is highly prevalent in hemodialysis patients. Ambulatory-BP-monitoring (ABPM) during the 44-h interdialytic interval is recommended for hypertension diagnosis and management in these subjects. This study assessed the diagnostic accuracy of fixed 24-h ABPM recordings with 44-h BP in hemodialysis patients.

Material & Method: 242 Greek hemodialysis patients that underwent valid 48-h ABPM (Mobil-O-Graph NG device) were included in the analysis. We used 44-h BP used as reference method and tested the accuracy of the following BP metrics: 1st 24-h without HD period (20h-1st), 1st 24-h including HD period (24h-1st) and 2nd 24-h (24h-2nd).

Results: All studied metrics showed strong correlations with 44-h SBP/DBP (20h-1st: r=0.973/0.978, 24h-1st: r=0.964/0.972 and 24h-2nd: r=0.978/0.977, respectively). In Bland-Altman analysis, small between-method differences (−1.70, −1.19 and +1.45 mmHg) with good 95% limits-of agreement ([−10.83 to 7.43], [−11.12 to 8.74] and [−6.33 to 9.23] mmHg, respectively) for 20h-1st, 24h-1st and 24h-2nd SBP were observed. The sensitivity/specificity and κ-statistic for diagnosing 44-h SBP≥130 mmHg were high for 20h-1st SBP (87.2%/96.0%, κ-statistic=0.817), 24h-1st SBP (88.7%/96.0%, κ-statistic=0.833) and 24h-2nd SBP (95.0%/88.1%, κ-statistic = 0.837). Similar observations were made for DBP. In ROC-analyses, all studied BP metrics showed excellent performance with high Area-Under-the- Curve values (20h-1st: 0.983/0.992; 24h-1st: 0.984/0.987 and 24h-2nd: 0.982/0.989 for SBP/DBP respectively).

Conclusions: Fixed 24-h ABPM recordings during either the first or the second day of interdialytic interval have high accuracy and strong agreement with 44-h BP in hemodialysis patients. Thus, ABPM recordings of either the first or the second interdialytic day could be used for hypertension diagnosis and management in these subjects.

THE INFLUENCE OF AMBULATORY BP ON THE ASSOCIATIONS OF SEX WITH CARDIOVASCULAR EVENTS AND MORTALITY IN DIALYSIS PATIENTS: A PROSPECTIVE COHORT STUDY

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F. Iatridi[1], M. Theodorakopoulou[1], A. Karagiannidis[1], A. Georgiou[1], A. Karpetas[2], E. Karkamani[1], D. Faitatzidou[1], N. Haddad[1], A. Papagianni[1], P. Sarafidis[1]

[1]*First Department of Nephrology, Hippokration Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece*

[2]*Therapeutiki Hemodialysis Units, Thessaloniki, Greece*

Objective: Male patients with pre-dialysis CKD have worse ambulatory BP control than females and this is associated with higher mortality risk. Male hemodialysis patients have higher ambulatory BP levels compared to females. The aim of this study was to investigate the influence of ambulatory BP on the associations of sex with cardiovascular events and mortality in hemodialysis individuals.

Material & Method: 129 male and 91 female hemodialysis patients with valid 48-hour ABPM were followed prospectively for 53.4±31.1 months. The primary endpoint was cardiovascular mortality; the secondary endpoint was a composite of cardiovascular death, non-fatal myocardial infarction, non-fatal stroke, resuscitation after cardiac arrest, hospitalization for heart failure, coronary or peripheral revascularization procedure.

Results: Cumulative-freedom from the primary endpoint was significantly lower for women (logrank-p=0.032), while cumulative-freedom from the secondary endpoint did not differ significantly between the two groups (logrank-p=0.644). The crude risk for cardiovascular mortality was significantly higher for women (HR=1.613, 95%CI [1.037, 2.509]). The crude risk for the combined cardiovascular endpoint was not different between the two genders (HR=0.918, 95%CI [0.638, 1.320]). After adjusting for other risk factors (age, diabetes, dialysis vintage, coronary disease) no significant differences in the risk for both the primary and the secondary endpoint were observed between women and men (primary: HR=1.464 (95%CI [0.929, 2.307]), secondary: 0.866 (95%CI [0.596, 1.260])). After additional adjustment for 44-hour ambulatory BP the above relationships did not alter (primary: HR=1.498, 95%CI [0.947, 2.368]), secondary: (HR=0.911, 95%CI [0.625, 1.327])).

Conclusions: In contrast to patients with pre-dialysis CKD, ambulatory BP does not appear to significantly influence the relationship between gender and adverse cardiovascular outcomes in hemodialysis patients.

35 PROLONGED DURATION OF VASCULAR ACCESS FOR HEMODIALYSIS

P. Dejanov[1], V. Pusevski[1], N. Gjorgjiev[1], Z. Janevski[1], G. Spasovski[1], N. Gramatnikovski[2]

[1]*Clinic of Nephrology, Medical Faculty Skopje, R.N. Macedonia*

[2]*Clinic of Thoracovascular Surgery, Medical Faculty Skopje, R.N. Macedonia*

Introduction: A permanent vascular access (VA) is the life saving procedure in hemodialysis (HD) patients. The aim of the study was to present the more preferable procedures we used to prolong the duration of arterio-venous fistula (AVF).

Material and Methods: In the last 2 decades, we have performed 25532 procedures: 5798 AVF, 1199 tunneled cannulated catheters; 16682 femoral, 787 jugular and 1066 subclavian cannulations, using single/dual lumen, temporary/permanent catheters (femoral, subclavian, jugular), made of polyuretan or silicon. Insertion was performed by using the Seldinger technique. AVF creation was a latero-terminal anastomosis between radial artery and cephalic vein, brachial artery and basilic vein, brachial artery and cephalic vein. Aneurismo-raphia was performed at the Clinic of Thoracovascular surgery. Doppler mapping check for blood vessels was mandatory.

Results: Femoral artery cannulation in 15 cases lasted not more than 3 weeks, vena azygos cannulation in 3 cases lasted up to 3 years; sapheno-femoral AV grafts in 2 cases lasted less than a year; necklace AV graft in 1 case lasted 1 month; translumbal cannulation of VCI in 3 female cases lasted up to 3 years; and 15 cases of anaurismo-raphia showed best duration of 5 years. One case with bypass from brachio-cephalic vein to right atrium with graft and Thesio catheters insertion achieved up to 4 years.

Conclusion: From the obtained results, it can be concluded that aneurismo-raphia procedure is a method of choice that prolong the duration of VA for HD, improving patient's longevity and quality of life.

TREATMENT WITH HIGH CUT OFF MEMBRANES IN LONG HEMODIALYSIS SESSIONS IN PATIENTS WITH MULTIPLE MYELOMA AND ACUTE KIDNEY INJURY: OUR EXPERIENCE

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Z. Shterjova-Markovska, I. Rambabova-Bushljetikj, L. Trajceska, I. Nikolov, G. Severova, V. Karanfilofski, J. Usprcov, A. Canevska-Tanevska, A. Kabova, Z. Janevski, Vl. Pushevski, G. Spasovski

University clinic for Nephrology, University Ss Cyril and Methodius, Skopje, North Macedonia

Introduction: Multiple myeloma(MM) is a malignant proliferation of plasma cells in the bone marrow, with a significant release of serum free light chains(FLC) which can cause acute kidney injury(AKI).The key to treating AKI is rapid FLC reduction using newer chemotherapeutic agents,such as bortezomib and extracorporeal removal of FLC by using a High cut off membrane(HCO) with high permeability and molecular weight cut-off pore size (45-60kD) for hemodialisys(HD),allowing the filtration of both k and of λFLC.

Case series: We report on four cases with MM who developed AKI and were treated with HCO-HD and specific chemotherapy with bortezomib on our clinic. Initially,6-hour sessions were performed using a 2.1m^{2}HCO filter.Then, it was continued alternately every other day with additional sessions of 7-8h.

Results: Mean reduction ratio(mRR) of kFLC of the first patient was 53%, mRR of λFLC of the second patient was 66%, mRR of λFLC of the third patient was 57%, mRR of λFLC of the fourth patient was 61%.Three out of four patients recovered sufficient renal function to become independent of HD.Only the second patient did not recover the renal function,despite the reduction of FLC. There were no major changes in albumin levels using an infusion protocol of 2x50-ml vials of 20% albumin at the end of the HD session.

Conclusion: The combined treatments of chemotherapy plus long HD sessions with HCO filters are effective in reducing the of levels of FLC and recovering sufficient renal function,allowing significant savings and better quality of life.

Keywords: Acute kidney injury,Multiple myeloma,High cut off dialysis.

37 SODIUM BICARBONATE CATHETER LOCK SOLUTION IS NOT INFERIOR TO CITRATE SOLUTION IN PATIENTS DIALYZED THROUGH CENTRAL VENOUS CATHETER (CVC)

A. Martika, M. Tsamelasvili-Koutsaki, K. Pozoukidou, I.-T. Lampropoulou, D. Salvaridis, S. Spaia

Nephrology Unit, General Hospital of Thessaloniki Agios Pavlos, Greece

Introduction: Sodium bicarbonate lock solution (SBCLS) is a promising agent with antimicrobial and antithrombotic abilities. Citrate (CCLS) is another recommended solution from KDOQI guidelines. Objective of this study was to compare SBCLS8,4% to CCLS30% as a means of preventing HD catheter loss due to catheter-related thrombosis (CRT) and catheter-related bloodstream infection (CRBSI).

Material & Method: A prospective trial was conducted in 24 chronic HD patients with CVC for 6months. Patients were provided either a SBCLS8,4% (GroupA) or citrate catheter lock solution 30%(CCLS) (Group B), post-dialysis for 3months initially, followed by reversing the lock type for each group for the next 3months. Blood pump, arterial and venous pressure, URR and KT/V, CRT and CRBSI were recorded and catheter loss due to CRT or CRBSI was evaluated over 180days. Rescue therapy for catheter thrombosis/infection was administered as needed.

Results: 14 patients were assigned, originally in SBCLS group and 10 in CCLS group. No differences between groups at the onset. 9 CRT and 8 CRBSI episodes were recorded in the 1st trimester and 7 CRT and 17 CRBSI in the 2nd. GroupB appeared to have less CRBSI during the first period compared to Group A(0vs 0,31±0,5,p<0,05). Group B, also experienced more CRBSI during second trimester, while on SBCLS(0,1±0,3vs 0,7±0,2,p<0,05). CRT did not differ within or between groups. No catheter loss was recorded during study period.

Conclusions: Novel approach of using SBCLS is safe and equal to citrate in preventing HD catheter loss. SBCLS solution is inexpensive, readily available and potent to decrease dialysis-related costs.

THE EFFICACY AND SAFETY OF SUCROFERRIC OXYHYDROXIDE VERSUS SEVELAMER CARBONATE IN DIALYSIS PATIENTS: A META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

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Ch. Georgopoulos[1], M. Garoufis[2], I. Mallioras[1], I. Alekos[1], L. Gkika[1], A. Douni[1], A. Kitsos[1], C. Pappas[1], Ch. Gouva[2], E. Dounousi[1]

[1]*Nephrology Department, University General Hospital of Ioannina, Greece*

[2]*Hemodialysis Department, General Hospital of Arta, Greece*

Introduction: Phosphate binders are commonly used in patients receiving RRT, aiming to reduce and maintain serum phosphorus. Chronic kidney disease-mineral and bone disorder has been linked to reduced lifespan and worsened quality of life.

Scope: This study aims to examine the efficacy and safety of sucroferric oxyhydroxide versus sevelamer carbonate in patients receiving RRT.

Methods: The data sources examined were MEDLINE(PubMed), Scopus, and the Cochrane Central Register of Controlled Clinical Trials from September 2014 to March 2021. We examined RCTs that compared sucroferric oxyhydroxide versus sevelamer carbonate in the adult population receiving RRT.

Results: The inclusion criteria were met by 5 studies. There was a statistically significant difference in the reduction of serum phosphorus between the two groups {MD: -0.05 mmol/l,95% CI common(fixed)effect: -0.1 to 0.00, p-value:0.035}. A statistically significant difference was observed in serum i-PTH reduction between the two drugs {MD: -2.84 mmol/l,95% CI common(fixed)effect: -3.54 to -2.14, p-value<0.001}. No statistically significant difference was observed in all adverse events between the two groups (OR:1.06, 95% CI:0.64-1.76, random effects model).

Conclusion: The meta-analysis of RCTs proved that Sucroferric oxyhydroxide controls serum phosphorus as effectively as sevelamer without any increase in the adverse event ratio. Sucroferric oxyhydroxide is another valuable option for patients receiving RRT with hyperphosphatemia.

39 DISRUPTION OF PERITONEAL MEMBRANE BARRIER FUNCTION BY PROLONGED EXPOSURE TO PERITONEAL DIALYSIS FLUIDS IS RESTORED WITH 2-DEOXY-GLUCOSE (2-DG) ADMINISTRATION

E. Pitaraki[1], R.M. Jagirdar[1], E. Rouka[2], M. Bartosova[3], S.I. Sinis[1,4], D. Divanis[5], K.I. Gourgoulianis[4], T. Eleftheriadis[6], I. Stefanidis[6], V. Liakopoulos[5], C. Hatzoglou[1], C. Peter Schmitt[3], S.G. Zarogiannis[1]

[1]*Department of Physiology, Faculty of Medicine, School of Health Sciences, University of Thessaly, BIOPOLIS, Larissa, Greece*

[2]*Department of Nursing, School of Health Sciences, University of Thessaly, GAIOPOLIS, Larissa, Greece*

[3]*Pediatric Nephrology, Center for Pediatrics and Adolescent Medicine, University of Heidelberg, Heidelberg, Germany*

[4]*Department of Respiratory Medicine, Faculty of Medicine, School of Health Sciences, University of Thessaly, BIOPOLIS, Larissa, Greece*

[5]*2nd Department of Nephrology, AHEPA Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece*

[6]*Department of Nephrology, Faculty of Medicine, School of Health Sciences, University of Thessaly, BIOPOLIS, Larissa, Greece*

Introduction: Bioincompatibility of Peritoneal Dialysis (PD) fluids (PDF) contributes to peritoneal membrane (PM) fibrosis and ultrafiltration failure. We assessed whether the PDF supplementation with 2-deoxy-glucose (2-DG), an inhibitor of mesothelial-to-mesenchymal transition, improves also PM barrier function.

Material & Method: An in vitro co-culture model of MeT-5A cells on the upper side of a Snapwell filter and EA.hy926 cells on the bottom side was developed to simulate the mesothelial and endothelial barriers, respectively. At cell confluence, filters were mounted in Ussing chambers followed by introduction of conventional (CPDF), bicarbonate- (BPDF) or lactate-buffered PDF (LPDF) with/without 2-DG (0.2 mM). Barrier function was evaluated by 4-hour monitoring of transmembrane resistance (RTM), 10kDa FITC-dextran diffusion, and expression levels of CLDN-1 to -5, ZO1, SGLT1, SGLT2 genes.

Results: CPDF increased the R_{TM} throughout the experimental time (CPDF: t_{0h}: 24.33±7.83, t_{1h}: 29.00±8.00, t_{2h}: 24.33±5.89, <0.001; t_{3h}: 21.00±5.50, <0.01; t_{4h}: 19.66±6.76,<0.05) compared to control (9.66±4.54), whereas a similar effect was evident up to 1, 2 hours for LPDF (t_{0h}: 22.00±1.53, <0.001; t_{1h}: 12.67±1.20, <0.05) and BDPF (t_{0h}: 44.00±8.50, <0.001; t_{1h}: 35.33±7.88, <0.01; t_{2h}: 32.67±6.67, <0.05), respectively. 2-DG ameliorating effect was evident in both R_{TM} (CPDF/2-DG: t_{0h}: 28.00±9.07, <0.001; t_{1h}: 23.33±4.91, t_{2h}: 23.00±4.72, <0.01; LPDF/2-DG: t_{0h}: 32.00±2.08, t_{1h}: 22.33±0.88, <0.001; t_{2h}: 19.00±3.21, <0.01; BPDF/2-DG: t_{0h}: 38.50±5.28, t_{1h}: 34.16±5.52, <0.001) and dextran flux (LPDF/2-DG: 0.76±0.01, BPDF/2-DG: 1.23±0.01, <0.001). Gene expression modulation was PDF-, cell type-depended.

Conclusions: The 2-DG PDF supplementation ameliorates PM functional attributes and should be further tested.

INCREASED LEVELS OF PERIPHERAL IGD$^-$CD27$^-$ B CELLS IN PATIENTS WITH LUPUS NEPHRITIS CORRELATE WITH EARLY DIFFERENTIATED T LYMPHOCYTE SUBSETS

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E. Moysidou[1], G. Lioulios[1], M. Christodoulou[1], A. Xochelli[2], S. Stai[1], A. Papagianni[1], P. Sarafidis[1], A. Fylaktou[2], M. Stangou[1]

[1]*School of Medicine, Aristotle University of Thessaloniki, 1st Department of Nephrology, Hippokration Hospital of Thessaloniki, Thessaloniki, Greece*

[2]*Department of Immunology, National Peripheral Histocompatibility Center, Hippokration Hospital of Thessaloniki, Thessaloniki, Greece*

Introduction: B and T lymphocytes display major alterations in patients with systemic lupus erythematous (SLE), demonstrating a significant upregulation of CD19+IgD$^-$CD27$^-$, double negative (DN) B cells. Aim of this study was to evaluate the correlation of distinct B-cell-pattern with T cell immunity changes in SLE.

Material & Methods: Flow cytometry was applied in 30 SLE patients and 31 healthy controls (HC), to detect peripheral DN B cells and a wide range of T lymphocyte subsets, namely naive, memory, and advanced differentiated/senescent T cells, based on the presence of CD45RA, CCR7, CD31, CD28, and CD57.

Results: Despite lymphopenia, DN B cell proportion predominated in SLE patients (Age=43±14yrs, Lupus Nephritis 23/30, SLEDAI score 2(1-5), eGFR=81±19mL/ min/1.73m^2, Uprot 680±5.600mg/24h) compared to HC, 12.9(2.3–74.2)% vs. 8(1.7–35)%, = 0.04. DN B cell population showed significant positive correlation with early differentiated T lymphocytes, CD4CD31+ (r= 0.587, p<0.001), CD4CD45RA+CD28+ (r= 0.504, p=0.005), CD4CD45RA+CD57- (r=0.419, p=0.021), CD4CD45RA-CD57-(r=0.397, p=0.003), CD4CD28+CD57- (r=0.487, p=0.006), CD4CD28+CD57+(r=0.491, p=0.006), CD4CD45RA-CCR7+ (r=0.381, p=0.038), CD8CD31+ (r=0.366, p=0.047), CD8CD45RA+ CCR7+ (r=0.0.432, p=0.017), CD8CD45RA-CD57-(r=0.444, p=0.014) and CD8CD28+ CD57-(r=0.363, p=0.048). The distribution of CD4 and CD8 lymphocytes demonstrated a clear shift to advanced differentiated subsets. Multiple regression analysis identified CD4CD31+, CD8CD45RA-CD57-, and CD8CD28+CD57- cells as independent parameters influencing DN B cells, with adjusted $R^2 = 0.534$ and < 0.0001.

Conclusions: DN B cells predominate in the peripheral blood of SLE patients, even at remission, and their population is closely associated with early differentiated T lymphocyte subsets, indicating a potential causality role of DN B cells in T lymphocyte activation.

41 INVESTIGATING THE ROLE OF CIRCULATING FOLLICULAR T HELPER LYMPHOCYTES IN LUPUS NEPHRITIS

E. Moysidou[1], M. Christodoulou[1], G. Lioulios[1], V.I. Nikolaidou[2], Christina Nikolaidou[3], P. Sarafidis[1], E. Frangou[4], A. Fylaktou[2], M. Stangou[1]

[1]*School of Medicine, Aristotle University of Thessaloniki, 1st Department of Nephrology, Hippokration Hospital of Thessaloniki, Thessaloniki, Greece*

[2]*Department of Immunology, National Peripheral Histocompatibility Center, Hippokration Hospital of Thessaloniki, Thessaloniki, Greece*

[3]*Department of Pathology, Hippokration Hospital of Thessaloniki, Thessaloniki, Greece*

[4]*Department of Nephrology, Limassol General Hospital, State Health Services Organization, Cyprus; Department of Basic and Clinical Sciences, University of Nicosia Medical School, Cyprus; Laboratory of Autoimmunity and Inflammation, Biomedical Research Foundation of the Academy of Athens, Athens, Greece*

Objective: Follicular T helper (TFH) cells are implicated in the pathogenesis of Lupus Nephritis (LN) by mediating the selection of high-affinity B cells in germinal centers. Herein, we describe the population of circulating-TFH cells in patients with LN and associate them with disease activity.

Materials & Methods: Peripheral blood was collected from 25 LN patients (LN) and 25 healthy controls (HC). Flow cytometry was performed to assess cTFH (CD4+CD45RA$^-$CXCR5+) cells, and their subsets, defined as cTFH1 (CD4+CD45RA$^-$CXCR5+CXCR3+ CCR6-), cTFH2 (CD4+CD45RA$^-$CXCR5+CXCR3-CCR6-), cTFH17 (CD4+CD45RA$^-$CXCR5+CXCR3-CCR6+) or activated-cTFH, cTFH-ICOS+ (CD4+CD45RA$^-$CXCR5+ ICOS+).

Results: Preliminary results were analyzed in 14 LN patients (Age=38±8yrs) and 8 HC (Age=31.5±7yrs). The percentage and total number of cTFH cells were similar between LN and HC [11(0.6-22.4)% and 41.6(3.4-412.7)cells/μL, vs. 8.8(1.9-12.1)% and 43.5(13.3-69.6)cells/μL, respectively]. cTFH-ICOS+, cTFH1 and cTFH2 cells were upregulated in LN compared to HC [0.9(0-5.2) vs. 0.256(0-1)cells/μL, 6.7(0.2-25.9) vs. 1.9(0.4-13.3)cells/μL, and 9.88(0-14.5) vs 1.82(0.46-32)cells/μL, respectively], while the cTFH17 compartment was obviously condensed [6.58 (0.79-213.8) vs 16.9(0.6-29.2)cells/μL, respectively]. Increased SLEDAI-2K score (>6) was associated with increased cTFH [75(14-413) vs. 34(3-99)cells/μL], cTFH1 [12.45(2-26) vs. 3(0.2-18)cells/μL], cTFH2 [10.38(5-14) vs. 2.27(0-11)cells/μL], cTFH17 [23.8(0.8-214) vs. 1.6(1-44)cells/μL], and cTFH-ICOS+ [1.13(0.5-5.19) vs. 0.552(0-1.18)cells/μL]. Increased levels of proteinuria were characterized by increased cTFH1 [12.4(2.08-25.88) vs. 6.7(0.2-18.17)cells/μL] but reduced cTFH17 [3.7(0.8-42.3) vs. 6.6(1.06-213.8)cells/μL] and cTFH-ICOS+ [0.22(0-5.19) vs. 0.9(0-3.7)cells/μL].

Conclusions: All subtypes of cTFH were increased in active LN patients, while proteinuria levels were associated with increased cTFH1 but reduced cTFH17 and cTFH-ICOS+, suggesting the involvement of different pathogenic mechanisms and the possibility of an appealing therapeutic target for LN.

ISSN 1312 - 2517

BANTAO Journal

e-POSTERS

01 P01 HANTAVIRUS RARE CASE WITH BOTH RENAL AND PULMONARY AFECTION - CASE REPORT

Z. Janevski, V. Pusevski, N. Gjorgjievski, Z.S. Markovska, I.R. Busletic, B. Bedzeti, S. Filipovski, G. Trajkovski, V. Ristovska

Department of Nephrology, Medical Faculty. Skopje, N. Macedonia

Hantavirus cardiopulmonary syndrome (HCPS) is a severe, acute emerging disease characterized by increased capillary permeability causing vascular leakage, and thrombocytopenia(1). Hantavirus causes the hantavirus pulmonary syndrome, which is characterized by a brief prodromal illness followed by rapidly progressive, noncardiogenic pulmonary edema(2). HFRS has five phases such as febrile, hypotensive, oliguric, polyuric, and convalescent. Diagnostics of hantavirus infections relies on serology, performed principally with enzyme immunoassay (EIA) or immunofluorescence assay (IFA). There are d four 5-min immunochromatographic IgM-antibody tests for diagnostics of acute Puumala, Dobrava and Hantaan virus infections and a similar combination test to detect all Eurasian pathogenic hantavirus infections. We evaluated the assays using 100 fingertip blood samples collected randomly from Finnish volunteers, 28 confirmed hantavirus IgM-negative sera, and 77 sera from patients with acute infections of various hantaviruses(3). There are currently no FDA-approved vaccines or treatments for these hantavirus diseases. This review provides a summary of the status of vaccine and antiviral treatment efforts including those tested in animal models or human clinical trials(4). We present a 14-year-old patient, a rare case of hantavirus-induced renal and pulmonary involvement. He was admited due to severe abdominal pain, nausea, vomiting and malaise. It was reported that the symptomatology started three days ago and with fever. He was transferred to our clinic where was serologically confirmed Hantavirus-IgM. At our clinic, during the hospitalization, the patient was managed conservatively. The condition worsened, requiring urgent intubation and transfer of the patient to KARIL. In KARIL it was placed on a mechanical ventilation, treated accordingly. Several hemodialysis sessions were performed, the patient was properly treated with appropriate therapy, during which the condition improved and he was transferred to our clinic for further investigation and treatment. He was discontinued from hemodialysis treatment and discharged in an improved condition.

Keyword: Hantavirus, Hantavirus hemorrhagic fever with renal syndrome (HFRS) and hantavirus pulmonary syndrome (HPS).

Introduction: Hantavirus hemorrhagic fever with renal syndrome (HFRS) and hantavirus pulmonary syndrome (HPS) are caused by hantaviruses, specifically when humans inhale aerosolized excrements of infected rodents(5). Both diseases appear to be immunopathologic, and inflammatory mediators are important in causing the clinical manifestations(6).

Hantavirus infections have been reported from all continents except Australia. The most affected regions are China, the Korean Peninsula, Russia (Hantaan, Puumala, and Seoul viruses), and Northern and Western Europe (Puumala and Dobrava virus). Regions with the highest incidences of hantavirus pulmonary syndrome include Argentina, Chile, Brazil, the United States, Canada, and Panama.

In Europe, there are two hantaviruses Puumala and Dobrava-Belgrade viruses – are known to cause HFRS.[49] Puumala usually causes a generally mild disease, nephropathiaepidemica, which typically presents with fever, headache, gastrointestinal symptoms, impaired renal function, and blurred vision. Dobrava infections are similar, except that they often also have hemorrhagic complications(7).

When patients may have been exposed to rodents or rodent droppings, especially in and around the house, clinicians should request serologic testing to detect hantavirus-specific IgM and IgG(8).

Case report: We present a 14-year-old patient, a rare case of hantavirus-induced renal and pulmonary involvement, referred from the Digestive Surgery Clinic-Skopje, where he was admited due to severe abdominal pain, nausea, vomiting and malaise. It was reported that the symptomatology started three days ago and with fever. At the Digestive Surgery Clinic in Skopje, conservative treatment was started and a CT-scan of the abdomen was performed without signs of acute abdominal pain.The patient reports that on admission he had a hyperemic ocular mucosa. Lab tests with sCr 137, umol/L low platelet count-Plt 34-10^9/L, and serologically confirmed Hantavirus-IgM. All the time with well preserved diuresis. Due to an increase in serum urea level and creatinine, he was transferred to our clinic, nephrology clinic - Skopje for further treatment and follow-up.

At our clinic, during the hospitalization, the patient was managed conservatively with parenteral, electrolyte, vitamin, diuretic, corticosteroid and anticoagulant therapy. Because of high values for proteinuria and low levels of protein status substituted with isogroup plasma. Diarrheal syndrome treated with appropriate therapy. Diuresis for the whole time preserved up to 1800 ml/24 hours, but with a rapid increase in serum urea and creatinine. On the second day of hospitalization, there was a sudden worsening of the general condition with dyspnea and a drop in saturation up to 80%. Immediately placed on supplemental oxygen. Despite the given therapy, a continuous drop in saturation was notice. The patient was transferred to the department for intensive care and treatment - KARIL in Skopje with saturation 88% under maximum supplemental oxygen. The patient was intubated, placed on mechanical ventilation with continuous sedation. Hemodialysis treatment was started and two hemodialysis treatments were carried out. Maintained diuresis all the time. X-ray finding and CT finding of lung in addition to bilateral pleural effusions. Treated with parenteral antibiotic, bronchodilator, gastroprotective, vitamin and infusion therapy.

Due to the improvement of the patient's overall condition, after 6 days of treatment, he was transferred to our clinic for further evaluation of the kidney function and there was treated with double antibiotic therapy (Vancomycin and Imipenem), anticoagulant, gastroprotective, hepatoprotective and vitamin therapy.

Due to sinus bradycardia, a cardiologist was consulted, an echocardiography was performed, without the need for therapy. Intensively hydrated, diuretic response up to 8000ml/24h with a drop to normalization of the degradation products in the blood. Femoral venous catheter for hemodialysis was removed, patient discontinued from HD. All the time patient was hemodynamically and respiratoryly stable, and afebrile. He was discharged in good general condition with normal renal function.

Laboratory findings- Table 1

RBC: 3.8...4.0...3,810^12/L	Urea: 17..11...8.3..5,2..6,6mmol/L	Na: 140..141...138mmol/L
Hgb: 111...114...107g/L	Creat:328.. 172...123..98...86umol/L	K: 3,7..3.8...3.9...4,3mmol/L
Hct: 0.3...0.3...0,3rv	Acid. Uric..: 366...285...375	Ca: 1.8...2.0...2,3mmol/L
PLT: 275...260...24010^9/L	**Glik**:5,8… 4.9...4.8..4,9mmol/L	HPO4: 1.2...1.2...1,3mmol/L
Wbc: 9.5...6.6..5,310^9/L	**CRP**: 28...11...1,4mg/L	
AP 39...59..90; AST 27...52...50; ALT 17...43...88; LDH 314...216; CK 38...32		
alb. 23..29...33...45: tot.prot. 44..58...62..79		
Proteinuria: 0.08 g/l;		

Discusion: Like we mantion before there is HCPS and HFRS fase.
Overall mortality of pulmonary syndrome is 50% to 70%.
Oliguria typically lasts from 3 to 7 days with a transient decrease in renal function. This is followed by the polyuric phase with improvement of renal functions and full recovery over next 6 months without significant complications(9).
Along with its rodent host, the bank vole (Clethrionomysglareolus), Puumala is reported throughout most of Europe (excluding the Mediterranean region), whereas Dobrava, carried by the yellow-necked mouse (Apodemusflavicollis), and Saaremaa, carried by the striped field mouse (Apodemusagrarius), are reported mainly in eastern and central Europe.
About 5% of hospitalized PUUV and 16%-48% of DOBV patients require dialysis and some prolonged intensive-care treatment. Although PUUV-HFRS has a low case fatality rate, complications and long-term hormonal, renal, and cardiovascular consequences commonly occur(10).
The diagnosis of acute hantavirus infection is based on the detection of virus-specific IgM. Whereas Puumala is distinct, Dobrava and Saaremaa are genetically and antigenically very closely related and were previously thought to be variants of the same virus.Typing of a specific hantavirus infection requires neutralisation antibody assays or reverse transcriptase PCR and sequencing(11).

Conclusion: Despite the severity of the disease and the rarity of involvement of both renal and pulmonary conditions, persistence and team treatment, careful monitoring of vital and laboratory parameters result in success in treatment. We present the case because of its specificity of renal and pulmonary function involvement.
Larger community-based studies are needed to evaluate the seroprevalence of hantavirus infection among humans and domestic rodents because hantavirus could be a potentially emerging serious public health problem(12).

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02 MANAGEMENT OF SPONDYLODISCITIS IN PATIENTS ON HEMODIALYSIS – CASE STUDY

N. Gjorgjievski[1], V. Karanfilovski[1], A. Stojanovska[1], A. Kabova Karnfilovikj[1], A. Spasovska-Vasilova[1], Z. Petronijevikj[1], Z. Janevski[1], V. Pushevski[1], P. Dejanov[1]

[1]*University Clinic of Nephrology, Medical Faculty-Ss Cyril and Methodius, Skopje, North Macedonia*

Introduction: Spondylodiscitis is a life-threatening bacterial infection of intervertebral disks and adjacent vertebrae. It is a very uncommon disease that is often discovered late, and early treatment appears to be very important. Hemodialysis (HD) patients are at greater risk for spondylodiscitis due to the immunodepression typical of uremia, the frequent venipunctures of native and prosthetic fistulae, and the presence of temporary or permanent venous catheters (VC).

Case presentations: We presented a study of three Caucasian men on chronic HD with Spondylodiscitis. All three patients were on HD for more than 3 years and the last vascular access for HD was a temporary jugular central VC. The main symptom in all patients was permanent back pain, nonresponsive to standard analgesic drugs. The blood analyses showed high C-reactive protein (CRP) and leucocyte levels. The diagnosis was confirmed by a computer tomography (CT) scan of the spine which showed inflammation in the lumbar region. The blood cultures from VC and peripheral veins were taken from all three patients, but only one patient had positive results with staphylococcus aureus methicillin-resistant (MRSA). The other two patients had negative blood cultures. The diagnosis indicated an immediate start with intravenous wide-spectrum antibiotics. Initially, we started with Vancomycin and Ciprofloxacin. Empirical antibiotics were used in 2 cases in which no microorganism had been isolated. Surgical treatment was performed in one patient due to neurological symptoms, and the presence of large bone destruction with progressive spinal deformity. Antimicrobial treatment was performed with intravenous combined antibiotic therapy for four weeks, followed by oral combined antibiotic therapy (clindamycin and ciprofloxacin) for additional six weeks after the clinical symptoms and CRP settled down.

Conclusion: Bacteremia is a common complication in HD patients resulting from contaminated vascular access devices. Early diagnosis of spondylodiscitis is a very important issue in order to perform the appropriate tests and antibiotic treatment. The most common symptom found in our series was back pain. The diagnosis was confirmed by a CT and should be performed whenever a patient under HD develops symptoms that might be suggestive of this diagnosis.

NEW-ONSET NEPHROTIC SYNDROME AND INTERSTITIAL NEPHRITIS FOLLOWING VACCINATION AGAINST COVID-19 IN A PATIENT WITH KNOWN IgA GLOMERULOPATHY IN REMISSION FOR 17 YEARS

03

M. Sofra[1], C. Gakiopoulou[2], P.E. Andronikidi[1], V. Athanasiadou[1], D. Panokostas[1], K. Palamaris[2], E. Grapsa[1]

[1]*National and Kapodistrian University of Athens, Aretaieion Hospital, Nephrology Department, Athens, Greece*

[2]*National and Kapodistrian University of Athens, First Department of Pathology, Medical School, Athens, Greece*

Introduction: Although vaccination is one of the most effective methods to halt the pandemic, relapsed or new-onset kidney diseases have been reported after Covid-19 vaccination.

Material & Method: We present a case of a new-onset nephrotic syndrome and intentitial nephritis post COVID-19 vaccination. Pertains to a 71-years-old Caucasian man with known IgA nephropathy diagnosed 20 years ago with kidney biopsy in remission for 17 years after a 6-month course of steroids and cyclophosphamide (urine protein <300mg/24h). Five days after the fifth dose of the Pfizer-BioNTech COVID-19 vaccine he presented with peripheral edema, increased proteinuria (1600mg/24h), decline in renal function (Serum creatinine (Scr) 1.95mg/dL) and further deterioration 2 months later (Urine protein 7060mg/24h, Scr 3.21mg/dL - estimated glomerular renal function (eGFR) 15.3ml/min/1.73m^2). Kidney ultrasound showed normal renal parenchyma. A second kidney biopsy was performed and an immunosuppressive regimen with corticosteroids was administered.

Results: The kidney biopsy sample included twenty glomeruli, 4 of them globally sclerosed (20%), the rest with mesangial matrix increase and cellular proliferation with exudative components. Immunofluorescence revealed granular staining of IgA (2+/3+) C3 (2+/3+), λ-chains (2+/3+). Interstitial fibrosis was estimated at 40% and tubular atrophy at 30% in the cortex. Overall, intense inflammatory activity was observed as in chronic interstitial nephritis. Six months later, eGFR was slightly higher (19 ml/min/1.73m^2), proteinuria was decreased (1700mg/24h) and there was no further progression of the disease.

Conclusions: We consider the onset of nephrotic syndrome and the deterioration of renal function with the appearance of interstitial nephritis as a possible consequence of Covid-19 vaccination.

04 DNAJB9-ASSOCIATED FIBRILLARY GLOMERULONEPHRITIS MASQUERADING AS MEMBRANOUS GLOMERULOPATHY

N. Sabanis[1], P. Liaveri[2], V. Geladari[1], G. Liapis[3], T. Poulli[2], E. Patrikalou[1], P. Founda[1], G. Moustakas[2]

[1]*Department of Nephrology, General Hospital of Trikala, Trikala, Greece*

[2]*Department of Nephrology, General Hospital of Athens "Georgios Gennimatas", Athens, Greece*

[3]*Department of Pathology, Medical School, National and Kapodistrian University of Athens, Greece*

Introduction: Fibrillary Glomerulonephritis (FGN) is a rare immune-mediated glomerular disease characterized by different histological patterns and ultrastructurally by the presence of amyloid-like, fibrillary deposits in the capillary wall. Typically, patients manifest nephrotic syndrome, microscopic hematuria, hypertension and various degrees of renal insufficiency. The prognosis is usually severe and progression to ESKD is the rule given that no specific treatment is available until now.

Material & Method: A 63-year-old Caucasian man was evaluated due to severe proteinuria, microscopic hematuria and uncontrolled hypertension.

Results: Diagnostic evaluation for secondary nephrotic syndrome causes was negative, whereas serum and urine immunofixation revealed the presence of IgGκ monoclonal bands. Biopsy sample showed 2 glomeruli, with mesangial expansion and thickened GBM on light microscopy, while IgG and C3 were 1-2+on GBM and mesangium in immunofluoerscence. Thickened GBM with fibrils on electron microscopy were found, while DNAJB9 in immunohistochemistry was positive, allowing the confirmation of FGN. Bone marrow biopsy excluded the diagnosis of plasma cell dyscrasia. Thereafter, a combination of steroid with rituximab was initiated while he was receiving the standard anti- hypertensive therapy, simultaneously with an SGLT2 inhibitor. The 12-month follow-up showed approximately 85% decrease in proteinuria alongside stabilization of kidney function and blood pressure normalization.

Conclusions: DNAJB9-associated FGN may mimic membranous glomerulopathy, especially in a small kidney sample and when there is extensive involvement by fibrils of GBM. Thus, ultramicroscopic examination is of crucial importance regarding the differential diagnosis of glomerular deposition diseases and DNAJB9 identification on immunohistochemistry represents a robust biomarker in FGN diagnosis.

SUCCESSFUL TREATMENT OF RECURRENT FOCAL SEGMENTAL GLOMERULOSCLEROSIS WITH COMBINATION OF RITUXIMAB AND PLASMAFERESIS IN A KIDNEY TRANSPLANT RECIPIENT- CASE REPORT

05

G. Severova[1], V. Karanfilovski[1], A. Stojanovska-Severova[1], P. Dzekova-Vidimliski[1], I. Nikolov[1], L. Trajceska[1], Z. Shterjova[1], I. Rambabova-Bushletik[1], V. Ristovska[1], G. Spasovski[1]

[1]*Clinical Center, Mother Theresa UC of Nephrology Skopje F.Y.R. of N. Macedonia*

Background: Recurrence of focal segmental glomerulosclerosis (FSGS) is a major therapeutic challenge in kidney transplantation. Plasmaferesis (PF) and high- dose rituximab have been proposeed as therapy, but number of PF and dosage of rituximab have not been determinated.

Methods: We reported the case of a 40 years women with recurrent FSGS on the transplanted kidne, proved with graft biopsy. She received the kidney from her mother and had a regular controls on the clinic.The graft function was normal, under the immunosuppressive therapy that include Decortin/ Imuran/Tcrolimus and with Basiliximab as an induction therapy. The Imuran was introduced because of plan for the first pregnancy. The patient showed marked proteinuria (1 g/L), elevation of serum creatinin (130µmol/L) and production of donor specific anti HLA antibody, four years after transplantation. Five plasmaferesis and amp. Rituximab 500 mg were applied to the patient. Also the Imuran has been changed with Mycophenolic acide. Immediately after treatment proteinuria and serum creatinin started to improve. Two year after treatment the full remission of proteinuria (0,1 g/L) and serum creatinin (108 µmol/L) was observed.

Conclusions: This case suggested that recurrent FSGS can be any time after transplantation. Introducing the Imuran because of the plan for pregnancy, could have been a risk factor for this first episode of recurrence of focal segmental glomerulosclerosis. Because of this should be promptly treated with a combination of plasmaferesis and rituximab. This treatment not only treats the recurrence of FSGS, but also successfully prevents further relapses.

06 SUCCESSFUL TREATMENT OF ENDOCARDITIS WITH NONSPECIFIC PRESENTATION IN A KIDNEY TRANSPLANT PATIENT - CASE REPORT

J. Usprcov[1], A. Kabova-Karanfilovik[1], Vl. Karanfilovski[1], A. Spasovska[1], A. Canevska Taneska[1], Z. Shterjova[1], G. Severova[1], F. Arnaudova[2], A. Jovskovski[2], O. Bushljetikj[2], M. Gerakaroska[3], S. Jovev[3], I. Rambabova Bushljetikj[1], G. Spasovski[1]

[1]University Clinic for Nephrology, N. Macedonia

[2]University Clinic for Cardiology, N. Macedonia

[3]University Clinic for Cardiac Surgery, N. Macedonia

Infective endocarditis (IE) is a serious complication in patients with transplanted kidney, leading to graft loss and a high mortality rate. We present a case of native valve endocarditis in a 51-year-old male with transplanted kidney that had atypical clinical course. The patient experienced prolonged subfebrile temperature with paroxysmal arrhythmia and development of cardio-pulmonary insufficiency. Transthoracic echocardiography (TTE) set the diagnosis of aortic valve vegetation with severe aortic regurgitation and pulmonary edema. We failed to isolate a microbiological agent, but all blood cultures were taken under antibiotic therapy. The patient was treated with surgical replacement of the native aortic valve with mechanical heart valve with significant clinical improvement. Ten days after the intervention, he was discharged with reduced markers of inflammation and proper function of the kidney graft. Immunosuppressive therapy was gradually reinstated. One year later, the patient was clinically stable and with proper graft function. Early diagnostic and therapeutic intervention, particularly intensive antibiotic therapy and surgical management can preserve the patient and the kidney allograft.

SUCCESSFUL TREATMENT OF EMPYEMA-INDUCED SEPTIC SHOCK USING OXIRIS HEMOFILTER: A CASE REPORT

07

L. Trajceska[1], I. Rambabova Busetikj[1], V. Pusevski[1], L. Mikjunovikj Derebanova[2], N. Mehmedovic[3], M. Mojsova[2]

[1]Department of nephrology, Faculty of Medicine "Ss. Cyril and Methodius" University Skopje, R.N.Macedonia

[2]Department of Anaesthesia and Reanimation, Faculty of Medicine "Ss. Cyril and Methodius" University Skopje, R.N.Macedonia

[3] Clinic for State Cardiac Surgery, Faculty of Medicine "Ss. Cyril and Methodius" University Skopje, R.N.Macedonia

Objective: Septic shock results in multiorgan dysfunction and high mortality. This is a report on a septic child with cytokine storm and kidney injury treated with Oxiris hemofilter.

Case presentation: We report a case of a 9-year-old girl with Streptococcus pyogenes bacteremia-mediated septic shock who was admitted to the intensive care unit. She had a 3-day history of fever, erythema polymorphe and chest pain. With the deterioration of symptoms, including dyspnea, severe hypoxia, hypotension and oliguria, she was diagnosed with pleural empyema. Drainage of 1.5L of pus was performed, supportive treatment (fluid resuscitation, antibiotic therapy, mechanical ventilation, vasopressin, norepinephrine, and dobutamine) was initiated. Due to the severe systemic inflammatory reaction, she developed myocarditis and stage 2 acute kidney injury. With the approval of the patient's family continuous venovenous hemodiafiltration was implemented using an oXiris hemofilter, to enhance the clearance of cytokines and endotoxins. The therapeutic dose of 35ml/kg/h was applied, blood flow was gradually increased up to 100ml/min, ultrafiltration 160ml/hour according to hematocrit and lactate level. This blood purification protocol was continued for 72 h using three filters which were changed every 24h. The inflammatory biomarkers and doses of vasopressors rapidly declined after first 10 hours and AKI recovered by 48hours. Considering dialysis, the dose of vancomycin was adjusted to 10 mg/kg/times each 12 h, and the dose of meropenem to 17.5 mg/kg/times each 12 h. The patient was weaned off mechanical ventilation after 20 days and transferred to the general ward several days later with a total hospitalization duration of 40 days.

08 ACUTE RENAL FAILURE (RIFLE III) IN PATIENT WITH URINARY BLADDER DIVERTICULI

L. Spahiu, N. Morina, I. Rudhani, M. Berbatovci-Ukimeraj
University Clinical Center of Kosovo, University of Prishtina - Faculty of Medicine - Prishtina

Introduction: We will present a unique case so far that is not found in the scientific literature. We will present a case with acute renal failure-RIFLE 3 caused by the enormous accumulation of free intraperitoneal fluid from the passage of urine through a diverticulum from the urinary bladder. We are talking about a patient who had Atresio anus, Hypospadia periscrotalis and hernia inguinoscrotalis as a child.

Case Presentation: N.N, a 22-year-old male, reports abdominal pain since 4 days, while after 4 days, very pronounced vomiting appeared. The laboratory showed high values of nitrogenous substances, hyperkalemia and metabolic acidosis. The placement of CVC and emergency hemodialysis as well as the removal of intraabdominal fluid several times are indicated. USG of the Urotract is performed, the right kidney is normal, the left kidney with an enlargement of the pyelon. The urinary bladder is emptied. Enormous presence of interperitoneal fluid. Urinary catheterization was not possible after several attempts by nephrologists and urologists. After the CT of the abdomen and urinary tract, changes appeared in the urinary bladder, which were completed with an MRI of the abdomen. An examination of the intraperitoneal fluid is performed and results with the characteristics of urine. The cystoscopy is performed with difficulty and the Foley 14 catheter is placed, after which the urinary bag is filled and two days after the cystoscopy the intra-abdominal fluid does not accumulate, the sufficient amount of urine and the nitrogen values decrease until normalization.

Discussion: The possibility of collecting intraperitoneal urine from the urinary bladder is rare since most of the urinary bladder is an extraperitoneal organ. In our case, due to congenital problems of ureters, urinary retention and increased intravesical pressure, the passage of urine through the vesical diverticulum into the intraperitoneal space occurred. While in the opinion of what is the mechanism of renal damage, this has more to do with intra-abdominal pressure, renal vascular compression (similar to AKI in hepatorenal eyes).

SERUM GD-IGA1 AND PROTEOMIC ANALYSIS OF PLASMA AND URINE IN PATIENTS WITH IGAN, SCHEDULE OF THE STUDY EVALUATING CHANGES AFTER DEACTIVATING INTESTINAL-RENAL AXIS

09

C. Keskinis[1,2], E. Moysidou[1,3], J. Zoidakis[4], V. Vaios[1,5], E. Kapsia[6], M. Trivyza[7], P. Pateinakis[2], M. Papasotiriou[7], S. Marinaki[6], P. Sarafidis[1,3], V. Liakopoulos[1,5], V. Tesar[8], M. Stangou[1,3]

[1]*School of Medicinie, Aristotle University of Thessaloniki (AUTH), Greece*

[2]*Department of Nephrology, Papageorgiou Hospital, Thessaloniki, Greece*

[3]*1st Department of Nephrology AUTH, Hippokration Hospital, Thessaloniki, Greece*

[4]*Center of Systems Biology, Biomedical Research Foundation of the Academy of Athens, Athens, Greece*

[5]*2nd Department of Nephrology AUTH, AHEPA Hospital, Thessaloniki, Greece*

[6]*National and Kapodistrian University of Athens, Medical School, Nephrology Department and Renal Transplantation Unit, Laiko Hospital Athens, Athens, Greece*

[7]*Department of Nephrology and Renal Transplantation, University Hospital of Patras, Patras, Greece*

[8]*Department of Nephrology, 1st Faculty of Medicine, Charles University, Prague, Czech*

Introduction: Galactose-Deficient IgA1 immunoglobulin (Gd-IgA1), the initial step towards multi-hit pathogenesis of IgA Nephropathy is produced by intestinal-activated B lymphocytes. Aim of the study will be to evaluate Gd-IgA1 serum levels and inflammatory mediators in plasma and urine of patients with IgAN during deactivation of intestinal-renal axis.

Material and Methods: Adult patients, diagnosed with IgA nephropathy during the last 10years, maintaining eGFR>30ml/min/1.73m^2 and Uprotein>750mg/24hr, despite treatment with renin-angiotensin inhibitors and/or to Dapagliflozine for at least 6 months, will be included in the study. Renal biopsies will be revaluated, and classified according to MEST-C score. Serum levels of Gd-IgA1 and plasma and urine proteomics will be estimated and analyzed by performing machine learning algorithms at the beginning of treatment (T0), and accordingly at 3, 6, 9 and 12months, T0, T3, T6, T9 and T12 respectively.

Results: Twenty-four patients, M/F:17/7, Mean age: 47.21 ± 13.4years from five different departments fulfill the criteria and they have already started on budesonide treatment. All patients included between 05/2023 and 09/2023. At time of diagnosis, 41.46 ±37.79months ago, Mean age was 43.29±14.48years, eGFR 68.73±25.36ml/min/1.73 m^2 and Uprot 2.993±2.07gr/24hrs. At time of inclusion, 10/24 patients had already received steroids and 1/24 cyclophosphamide. At time starting budesonide treatment, eGFR was 58.82 ± 25.83 ml/min/1.73 m^2 and Uprot= 2.821 + 2.08gr/24hrs.

Conclusion: Levels of Gd-IgA1 and disease biomarkers at time of disease activity and during follow up will give important information about disease pathogenesis and also, reveal predictive markers of disease activity and outcome.

10 SUCCESSFUL SIMULTANEOUS LIVER-KIDNEY TRANSPLANTATION IN A HIGHLY SENSITIZED PATIENT WITH PRE-FORMED DONOR-SPECIFIC ANTIBODIES AND POSITIVE T/B FLOW CROSSMATCH: A CASE REPORT

M. Darema[1], A. Vittoraki[2], P. Kalogeropoulos[3], C. Skalioti[3], G. Papatheodoridis[4], S. Vernadakis[5], G. Sotiropoulos[6], S. Marinaki[1], I. Boletis[1]

[1]*National and Kapodistrian University of Athens Medical School, Laiko General Hospital, Department of Nephrology and Renal Transplantation, Athens, Greece*

[2]*Immunology Department, National Tissue Typing Center, General Hospital of Athens G. Gennimatas, Athens, Greece*

[3]*Department of Nephrology, 2nd Propaedeutic Internal Medicine, "Attikon" University Hospital, Medical School, National and Kapodistrian University of Athens, Athens, Greece*

[4]*Department of Gastroenterology, Medical School of National and Kapodistrian University of Athens, General Hospital of Athens Laiko, Athens, Greece*

[5]*Transplantation Unit, Laiko General Hospital, Athens, Greece*

[6]*2nd Department of Propaedeutic Surgery, Medical School, National and Kapodistrian University of Athens, Athens, Greece*

Introduction: Patients with pre-existing donor-specific antibodies (DSAs) and positive T/B Flow crossmatch (T/B FXM) prior to kidney transplantation are at an increased risk for antibody-mediated rejection and subsequent graft loss. Several studies show that simultaneous liver-kidney transplantation (SLKT) provides multifactorial liver-mediated immunomodulatory effects that enable successful kidney transplantation.

Material & Method: We present a case of a 60-year-old female with both end-stage renal disease (ESRD) and end-stage liver disease (ESLD) due to autosomal dominant polycystic kidney disease and polycystic liver disease who underwent a deceased-donor SLKT. She was highly sensitized (HS), with cPRA =98% and pre-formed DSAs, anti-HLA- A1, -B8, and -B39 with Mean Fluorescence Intensity (MFI) of 2259, 4982 and 2249 respectively. She had negative CDC crossmatch, and positive T/B FXM. The patient received induction therapy with the anti-IL-2 receptor antibody basiliximab and her maintenance therapy consisted of mycophenolate mofetil, tacrolimus and methylprednisolone.

Results: On the first day posttransplant, the assessment of anti-HLA antibodies showed no detected DSAs and cPRA=5%. The patient developed delayed renal graft function however her kidney function was recovered 10 days after transplantation with a serum creatinine of 0.8 mg/dl. Kidney allograft protocol biopsy showed no histopathological signs of rejection. Unfortunately, the patient died 60 days after transplantation due to septic shock with functioning kidney and liver grafts, without HLA-DSA rebound.

Conclusions: This case supports the evidence that SLKT ensures safe kidney transplantation in HS renal transplant recipients with HLA class I DSAs and positive T/B FXM. It is worth noting that transplantation can be performed successfully without desensitization treatment.

SPONTANEOUS GASTROCNEMIUS HEMATOMA -A RARE COMPLICATION IN DIALYSIS PATIENT

11

J. Usprcov, A. Canevska-Taneska, Z. Shterjova-Markovska, N. Gorgievski, Z. Janevski, A. Karanfilovik, V. Pushevski, G. Severova, L. Trajceska, I. Rambabova Bushljetikj, G. Spasovski

University Clinic for Nephrology, N. Macedonia

The prevalence of the musculoskeletal manifestations in hemodialysis population is high and increases with dialysis vintage and age. Spontaneous muscle or tendon rupture is not frequently observed. We present a case of 58-year-old patient with 25 years of dialysis vintage, last 10 years treated with high flux membrane hemodialysis. Patient experienced many cardiovascular complications, including pacemaker implantation during which a spontaneous hematoma of the delta-pectoral muscle was registered. Although a parathyroidectomy was performed before, he suffered from a recurrent secondary hyperparathyroidism and had constantly high levels of parathormone. His blood phosphorus levels were within normal ranges, and serum calcium levels were above normal. A diagnosis of Hepatitis C Virus (HCV) infection and consequent Reactive arthritis was made 20 years ago. Patient was regularly monitored by a rheumatologist; a frequent use of antibiotics (fluoroquinolones) and corticosteroids was observed. He presented with pain in the right lower limb accompanied with difficulty in walking for 2 weeks, and had no history of bleeding tendency or trauma. Physical examination revealed marked swelling and tenderness in his right calf. Ultrasonographic investigation demonstrated a large formation in the gastrocnemius muscle, indicating hematoma collection in phase of resorption, without signs of venous thrombosis. Treatment included low molecular weight heparin (LMWH) and antibiotics therapy, elastic bandage and drugs for swelling reduce for 10 days. The first ultrasonographic control after five days showed dissolution of hematoma. Early detection and managing of known risks can prevent long-lasting morbidity and preserve patient's quality life expectancy.

12 SERUM CYSTATIN C IN CDK4/6 INHIBITORS INDUCED "NEPHROTOXICITY"

C. Kaitantzoglou[1], A. Gerakis[1], D. Kalapanida[2], A. Vernadou[2], S. Fokas[1], G. Rigakos[2], I. Giatras[1], E. Razis[2]

[1]Department of Nephrology, Diagnostic and Therapeutic Center of Athens "Hygeia", Athens, Greece
[2]3rd Oncologic Clinic, Diagnostic and Therapeutic Center of Athens "Hygeia", Athens, Greece

Introduction: Cyclin-dependent kinase (CDK)4/6 inhibitors combined with aromatase inhibitors are first line treatment for hormone receptor (HR) positive and human epidermal growth factor receptor (HER) 2 negative metastatic breast cancer. Abrupt rise of serum creatinine (Scr) is observed due to interference with renal tubular creatinine secretion. However, true kidney injury can be encountered.

Aim: To examine the utility of serum cystatin C in distinguishing between real nephrotoxicity and "pseudo" AKI.

Material and methods: During past twelve months, 5 patients, all women, aged from 58 to 81 years, with metastatic breast cancer on therapy with CDK 4/6 inhibitors (4 on abemaciclib and one on ribociclib), disclosed 1.6 - 3.6-fold rise in Scr from baseline. Serum cystatin C, routine kidney exams and radioisotope GFR measurements by DTPA renal scan were performed in all patients.

Results: Serum cystatin C was abnormal in all but one patient, 1.5 to 2.0 times of upper normal limit (0.95mg/l). In addition, radioisotope assessed GFR was below normal. Conversely, none had active urine sediment or abnormal 24hour urine protein output. In all patients, CDK4/6 inhibitors were withheld, followed by Scr return to baseline. During follow-up Scr increased after rechallenge, notably in a lesser degree and drops after dose reduction or withdrawal, pattern similar to published literature. Thus, on clinical grounds, a pseudo-AKI was most probable.

Conclusion: In our patients, serum cystatin C seems to be unhelpful to identify patients with true deterioration of renal function. Close follow up, while keeping a low threshold for kidney biopsy is advisable.

PLASMAPHERESIS IN PATIENT WITH HENOCH-SCHÖNLEIN PURPURA

13

A. Ntemka, P. Kyriklidou, P. Pateinakis, E. Manou, E. Memmos, S. Panagakou, A. Karras, M. Makatounaki, E. Groumtsia, D. Papadopoulou

Nephrology Department, General Hospital "Papageorgiou", Athens, Greece

Introduction: IgA vasculitis, known as Henoch-Schönlein purpura (HSP), is a systemic vasculitis characterized by IgA immune complex deposition. It is the most common form of vasculitis in children and presents with rashes, joint pain, gastrointestinal symptoms and kidney disease. Patients with IgA nephropathy (IgAN), presenting with rapidly progressive glomerulonephritis, have poor prognosis despite aggressive immunosuppressive therapy. Plasmapheresis is an alternative treatment option, still not well established.

Material and Method: A 51-year-old man presented with petechial rash in lower extremities, arthralgia and edema. Laboratory tests revealed nephrotic level albuminuria (22gr), microscopic hematuria with normal serum creatinine value, ANA (1/320), negative ANCAs and elevated serum IgA (486mg/dl). Ultrasound guided percutaneous kidney biopsy was performed. The pathologic findings revealed hyperplastic necrotizing glomerulonephritis with IgA deposits. He was treated with intravenous methylprednisolone and oral cyclophosphamide. Due to rapidly progressive glomerulonephritis, treatment with plasmapheresis sessions was started. Ten sessions were performed with albumin as replacement fluid, due to an allergy to fresh frozen plasma. At the same time, hemodialysis sessions were started.

Results: It was recorded clinical/laboratory improvement, hemodialysis independence, normal serum creatinine value and reduction of albuminuria to non-nephrotic level (700mg).

Conclusion: Plasmapheresis could be an alternative treatment option in patients with IgAN/HSP presenting with severe acute renal failure, crescents presence in kidney biopsy and unresponsive to immunosuppressive therapy.

14 PLASMAPHERESIS IN A PATIENT WITH THROMBOTIC MICROANGIOPATHY AND FINAL DIAGNOSIS OF MALIGNANCY. HOW OFTEN DO WE FACE A DILEMMA?

A. Ntemka, P. Kiriklidou, E. Manou Eleni, P. Pateinakis, E. Mitsopoulos, M. Tsiatsiou, S. Panagakou, C. Keskinis, C. Lazarou, D. Papadopoulou

General Hospital Papageorgiou, Athens, Greece

Introduction: The term "thrombotic microangiopathy"(TMA) refers to a group of disorders characterized by microangiopathic hemolytic anemia, thrombocytopenia and microthrombi leading to ischemic dysfunction of several vital organs (neurological manifestations and renal failure). Primary causes are hemolytic uremic syndrome (HUS) and thrombotic thrombocytopenic purpura (TTP); secondary causes include pregnancy, autoimmune diseases, malignancies and drugs. It is a rare but urgent hematological disorder with therapeutic plasmapheresis being the treatment of choice.

Material and Method: A 68-year-old woman with a history of arterial hypertension and rheumatoid arthritis was admitted to the hospital due to weakness the last ten days. Anemia (Hb 5.1g/dl), thrombocytopenia (PLTs 17000/μL), increased hemolysis index and schistocytes (7%) were found in the peripheral blood smear. Due to strong suspicion of TTP (PLASMIC score 6 – high risk), a sample was sent to test ADAMS-13 activity. Daily plasmapheresis sessions with administration of fresh frozen plasma as replacement fluid were conducted. At the same time, a humanized anti-von Willebrand agent (caplacizumab) was administered.

Results: The patient showed no significant clinical/laboratory improvement and ADAMS-13 activity test was normal. Mammography revealed metastatic lobular breast carcinoma grade 2, ER/PR+, HER-2(2+), ki-67-5% with bone marrow infiltration. Plasmapheresis sessions were completed immediately. Patient was transferred to Oncology Department for further treatment with weekly paclitaxel as first-line therapy.

Conclusions: Cancer-associated TMA is a rare but serious complication. Initiation of unnecessary treatments (plasmapheresis or immunomodulatory drugs) can be avoided with early diagnosis. Plasmapheresis still remains a "bridge" therapy until the final diagnosis.

BEVACIZUMAB ASSOCIATED HYALINE OCCLUSIVE GLOMERULAR MICROANGIOPATHY IN A PATIENT WITH GLIOBLASTOMA

15

S. Fokas[1], A. Gerakis[1], C. Kaitantzoglou[1], I. Giatras[1], K. Palamaris[2], A. Nikolaidou[3], I. Athanasiadis[3], H. Gakiopoulou[2]

[1]Department of Nephrology, Diagnostic and Therapeutic Center of Athens "Hygeia", Athens, Greece
[2]First Department of Pathology, Medical School of University of Athens, Athens, Greece
[3]Oncology Clinic, Mitera Hospital, Athens, Greece

Introduction: Bevacizumab, a widely used anti VEGF agent, can cause proteinuria in patients with cancer. Thrombotic microangiopathy, podocytopathies and membranoproliferative glomerulonephritis are common glomerular histologic lesions in such patients.

Material & Method: Case report of a patient with bevacizumab associated hyaline occlusive glomerular microangiopathy.

Results: We report on a case of a 39 y.o. male diagnosed with glioblastoma five years ago, treated with bevacizumab as a second line therapy the past four years. He was referred to nephrology due to isolated proteinuria (2.4 g/ 24h) and hypertension. Renal function was normal. He was treated with ramipril for 6 months but there was a relapse of nephrotic range proteinuria (4.2 g/24h) without other signs of nephrotic syndrome. The patient was treated empirically with prednisone 40 mg/day and bevacizumab therapy was temporarily withheld leading to a partial remission of proteinuria (580 mg/24h). Prednisone was withdrawn due to patient's intolerance and there was a relapse of proteinuria (2.2 g/24h). A kidney biopsy was performed to establish the diagnosis and answer the therapeutic dilemma. It showed multiple PAS-positive hyaline pseudothrombi that occluded markedly dilated capillary lumens. Endothelial leakage and subendothelial accumulation of serum proteins due to increased endothelial permeability caused by VEGF inhibition is a possible pathophysiologic mechanism. Tacrolimus was chosen as a second line treatment and bevacizumab was restarted without any further proteinuria relapse (366 mg/24h).

Conclusions: Bevacizumab associated hyaline occlusive glomerular microangiopathy is a recently described pattern of glomerular injury distinct to thrombotic microangiopathy. Proper therapy is not yet described.

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Νέο Σύστημα ΑΠΚ **Homechoice Claria**

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Νέα Χαρακτηριστικά

- Αμφίδρομη επικοινωνία: εξ αποστάσεως αλλαγή των προγραμμάτων της συσκευής
- Εξ αποστάσεως αναβαθμίσεις του λογισμικού και τεχνική υποστήριξη
- 200% μεγαλύτερη οθόνη για βελτιωμένη ορατότητα συγκριτικά με τον αρχικό κυκλοποιητή ΑΠΚ **Homechoice**

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ΚΟΙΝΗ ΣΥΝΕΔΡΙΑ ΜΕ ΤΗΝ

ΕΛΛΗΝΙΚΗ ΔΙΑΒΗΤΟΛΟΓΙΚΗ ΕΤΑΙΡΕΙΑ

ΕΛΛΗΝΙΚΗ ΔΙΑΒΗΤΟΛΟΓΙΚΗ ΕΤΑΙΡΕΙΑ
HELLENIC DIABETES ASSOCIATION

ΕΠΙΣΤΗΜΟΝΙΚΟ ΠΡΟΓΡΑΜΜΑ

19-20 ΟΚΤΩΒΡΙΟΥ 2023

Επιτροπες

ΔΙΟΙΚΗΤΙΚΟ ΣΥΜΒΟΥΛΙΟ ΕΝΕ

Πρόεδρος	Πετράς Δημήτριος
Αντιπρόεδρος	Παναγούτσος Στυλιανός
Γεν. Γραμματέας	Παπαχρήστου Ευάγγελος
Ειδ. Γραμματέας	Φιλιόπουλος Βασίλειος
Ταμίας	Γριβέας Ιωάννης
Μέλη	Μπαλάφα Όλγα Στεφανίδης Ιωάννης

ΕΠΙΤΡΟΠΗ ΕΚΠΑΙΔΕΥΣΗΣ ΕΛΛΗΝΙΚΗΣ ΝΕΦΡΟΛΟΓΙΚΗΣ ΕΤΑΙΡΕΙΑΣ

Πρόεδρος	Πασαδάκης Πλουμής
Μέλη	Ελευθεριάδης Θεόδωρος Μπαλάφα Όλγα Παναγούτσος Στυλιανός Πετράκης Ιωάννης Πετράς Δημήτριος Ρουμελιώτης Στέφανος Σκαλιώτη Χρυσάνθη Σταμπολλίου Εμελίνα

Διοργάνωση

Ελληνική Νεφρολογική Εταιρεία

ΕΛΛΗΝΙΚΗ ΔΙΑΒΗΤΟΛΟΓΙΚΗ ΕΤΑΙΡΕΙΑ
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Οργάνωση / Γραμματεία

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Hall Alexandros II — Πεμπτη 19 Οκτωβριου

13:30–15:00 I. ΣΑΚΧΑΡΩΔΗΣ ΔΙΑΒΗΤΗΣ – ΧΝΝ, ΜΑΚΡΟΑΓΓΕΙΟΠΑΘΕΙΑ

Προεδρείο: **Ι. Γριβέας, Κ. Κώτσα**

13:30 – 13:50	Σακχαρώδης Διαβήτης: Επιδημιολογικά δεδομένα **Σ. Τσοτουλίδης**
13:50 – 14:10	Παθοφυσιολογία μηχανισμού υπερδιήθησης **Μ. Διβάνη**
14:10 – 14:30	Εξέλιξη Χρόνιας Νεφρικής Νόσου: Λευκωματουρία vs e-GFR **Α. Καποτά**
14:30 – 14:50	Μακροαγγειοπάθεια **Δ. Σκούτας**

15:00–16:30 II. ΣΑΚΧΑΡΩΔΗΣ ΔΙΑΒΗΤΗΣ – ΧΝΝ

Προεδρείο: **Α. Μαυρογιαννάκη, Δ. Πετράς**

15:00 – 15:20	Επιδημιολογικά δεδομένα στον Ελλαδικό χώρο **Α. Ράπτης**
15:20 – 15:40	Ασθενείς με σακχαρώδη διαβήτη και ΧΝΝ **Χ. Σαμπάνης**
15:40 – 16:00	Η λευκωματουρία ως θεραπευτικός στόχος **Π. Κρίκη**
16:00 – 16:20	Σημασία της πρώιμης πολυπαραγοντικής παρέμβασης **Μ. Γραμματίκη**

Hall Alexandros II — Πεμπτη 19 Οκτωβριου

16:30–18:00 III. ΦΑΡΜΑΚΕΥΤΙΚΗ ΑΓΩΓΗ ΑΣΘΕΝΩΝ ΜΕ ΣΑΚΧΑΡΩΔΗ ΔΙΑΒΗΤΗ

Προεδρείο: **Γ. Τζατζάγου, Αικ. Παπαγιάννη**

16:30 – 16:50	Ο ρόλος της μετφορμίνης **Ι. Ζωγράφου**
16:50 – 17:10	Ο ρόλος των στατινών **Ν. Κατσίκη**
17:10 – 17:30	Ο ρόλος της ασπιρίνης **Δ. Παπαδοπούλου**
17:30 – 17:50	Νέες κατηγορίες αντιδιαβητικών φαρμάκων **Θ. Κουφάκης**
18:00-18:15	**ΔΙΑΛΕΙΜΜΑ ΚΑΦΕ**

18:15–19:40 IV. ΣΑΚΧΑΡΩΔΗΣ ΔΙΑΒΗΤΗΣ ΚΑΙ ΑΡΤΗΡΙΑΚΗ ΥΠΕΡΤΑΣΗ

Προεδρείο: **Κ. Καζάκος, Σ. Ζιάκκα**

18:15 – 18:35	Αρτηριακή υπέρταση και ΣΔ, **Σ. Ζιάκκα**
18:35 – 18:55	ΣΔτ1 & ΣΔτ2: υπάρχει διαφορά στη διαχείριση της υπέρτασης; **Χ. Άντζα**
18:55 – 19:15	Θεραπευτικοί στόχοι υπέρτασης **Π. Γεωργιανός**
19:15 – 19:35	ACE vs ARBS **Ρ. Καλαϊτζίδης**

Hall Alexandros II — Παρασκευη 20 Οκτωβριου

09:00–10:30	**V. ΔΙΑΒΗΤΙΚΗ ΝΕΦΡΟΠΑΘΕΙΑ**
	Προεδρείο: **Χ. Μανές, Μ. Θεοδωρίδης**
09:00 – 09:20	Διατροφή και Διαβητική νεφρική νόσος, **Λ. Πούλια**
09:20 – 09:50	Ο ρόλος του Διαβητολόγου **Κ. Σιώμος**
09:50 – 10:10	Ο ρόλος του Νεφρολόγου **Μ. Θεοδωρίδης**
10:10 – 10:30	Αντιμετώπιση του καρδιονεφρομεταβολικού κινδύνου **Χ. Τρακατέλλη**
10:30–11:50	**VI. ΑΝΤΙΜΕΤΩΠΙΣΗ ΑΣΘΕΝΟΥΣ ΜΕ ΔΙΑΒΗΤΙΚΗ ΝΕΦΡΟΠΑΘΕΙΑ ΤΕΛΙΚΟΥ ΣΤΑΔΙΟΥ**
	Προεδρείο: **Τ. Διδάγγελος, Σ. Παναγούτσος**
10:30 – 10:50	Η διαχείριση της αναιμίας **Σ. Παναγούτσος**
10:50 – 11:10	Η διαχείριση της οστικής νόσου σε ασθενή με διαβήτη και ΧΝΝ **Π. Λιαβέρη**
11:10 – 11:30	ΣΔ και Αιμοκάθαρση και Περιτοναϊκή Κάθαρση **Δ. Μπαχαράκη**
11:30 – 11:50	Μεταμόσχευση νεφρού ασθενή με ΣΔ **Χ. Μελεξοπούλου**
12:00–12:30	**ΚΑΤΕΥΘΥΝΤΗΡΙΕΣ ΟΔΗΓΙΕΣ ΕΔΕ-ADA-EASD 2023**
	Προεδρείο: **Ν. Παπάνας**
	Κατευθυντήριες οδηγίες ΕΔΕ-ADA-EASD 2023. Τι αλλάζει στην κλινική πρακτική **Σ. Μπούσμπουλας**
12:30-13:30	**ΕΛΑΦΡΥ ΓΕΥΜΑ**
14:00-15:30	**ΓΕΝΙΚΗ ΣΥΝΕΛΕΥΣΗ**

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Ελληνική Νεφρολογική Εταιρεία

Στο πλαίσιο της Συνεχιζόμενης Ιατρικής Εκπαίδευσης

16ο Εκπαιδευτικό Σεμινάριο Νεφρολογίας

ΕΠΙΣΤΗΜΟΝΙΚΟ ΠΡΟΓΡΑΜΜΑ

20-22 ΟΚΤΩΒΡΙΟΥ 2023

Επιτροπες

ΔΙΟΙΚΗΤΙΚΟ ΣΥΜΒΟΥΛΙΟ ΕΝΕ

Πρόεδρος	Πετράς Δημήτριος
Αντιπρόεδρος	Παναγούτσος Στυλιανός
Γεν. Γραμματέας	Παπαχρήστου Ευάγγελος
Ειδ. Γραμματέας	Φιλιόπουλος Βασίλειος
Ταμίας	Γριβέας Ιωάννης
Μέλη	Μπαλάφα Όλγα Στεφανίδης Ιωάννης

ΕΠΙΤΡΟΠΗ ΕΚΠΑΙΔΕΥΣΗΣ ΕΛΛΗΝΙΚΗΣ ΝΕΦΡΟΛΟΓΙΚΗΣ ΕΤΑΙΡΕΙΑΣ

Πρόεδρος	Πασαδάκης Πλουμής
Μέλη	Ελευθεριάδης Θεόδωρος Μπαλάφα Όλγα Παναγούτσος Στυλιανός Πετράκης Ιωάννης Πετράς Δημήτριος Ρουμελιώτης Στέφανος Σκαλιώτη Χρυσάνθη Σταμπολλίου Εμελίνα

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Hall Aristotelis I — Παρασκευη 20 Οκτωβριου

16:00-17:40 ΟΞΕΙΑ ΝΕΦΡΙΚΗ ΒΛΑΒΗ

Συντονιστές: **Δ. Πετράς, Γ. Μπαμίχας**

16:00-16:25 Ορισμοί - Επιδημιολογία – Αιτιοπαθογένεια
Π. Γιαμαλής

16:25-16:50 Διαγνωστικοί Δείκτες ΟΝΒ-ΟΝΑ - Πρόληψη – Αντιμετώπιση
Δ. Ξυδάκης

16:50-17:15 Θεραπεία Υποκατάστασης της ΟΝΑ – Πρόγνωση
Κ. Κολοβού

17:15-17:40 Συζήτηση Κλινικών Περιπτώσεων
Γ. Μπαμίχας, Π. Γιάννου

17:45-20:15 ΧΡΟΝΙΑ ΝΕΦΡΙΚΗ ΝΟΣΟΣ

Συντονιστές: **Αικ. Παπαγιάννη, Σ. Ζιάκα**

17:45-18:10 Επιδημιολογία - Σταδιοποίηση - Παράγοντες Κινδύνου
Στ. Φραγκίδης

18:10-18:35 Μηχανισμοί Εξέλιξης της Χρόνιας Νεφρικής Νόσου - Ο Ρόλος της Υπέρτασης
Μ. Ανδρουλάκη

18:35-19:00 Στρατηγικές Πρόληψης - Επιβράδυνσης Εξέλιξης της Χρόνιας Νεφρική Νόσου
Α. Ρουμελιώτης

19:00-19:25 Φάρμακα και Νεφρός
Π. Γεωργιανός

19:25-19:50 Αναιμία Χρόνιας Νεφρικής Νόσου-Αντιμετώπιση, Νέοι παράγοντες
Ι. Τσουχνικάς

19:50-20:15 Διαταραχές των Οστών και Μετάλλων στη ΧΝΝ
Χ. Μπαντής

Hall Aristotelis I — Σαββατο 21 Οκτωβριου

09:00-12:15 ΧΡΟΝΙΑ ΝΕΦΡΙΚΗ ΝΟΣΟΣ

Συντονιστές: **Γ. Μουστάκας, Κ. Στυλιανού**

09:00-09:25	Καρδιαγγειακή Νόσος, Ρύθμιση και στόχος Αρτηριακής Πίεσης **Ρ. Καλαϊτζίδης**
09:25-09:50	Η Διατροφή στη Χρόνια Νεφρική Νόσο **Λ. Πούλια**
09:50-10:15	Σύνδρομο Εξάντλησης Πρωτεϊνών και Ενέργειας **Φ. Μίαρη**
10:15-10:40	Νοσήματα του Συνδετικού Ιστού και Χρόνια Νεφρική Νόσος **Μ. Στάγκου**
10:40-11:15	Κύηση στη Χρόνια Νεφρική Νόσο **Χ. Σκαλιώτη**
11:15-11:40	Η Χρόνια Νεφρική Νόσος στα Παιδιά **Ν. Πρίντζα**
11:40-12:15	Συζήτηση Κλινικών Περιπτώσεων **Γ. Μουστάκας - Κ. Στυλιανού**

12:20-14:50 ΠΕΡΙΤΟΝΑΪΚΗ ΚΑΘΑΡΣΗ

Συντονιστές: **Β. Λιακόπουλος, Α. Ανδρίκος**

12:20-12:45	Φυσιολογία Περιτοναίου και Αρχές της ΠΚ **Ο. Μπαλάφα**
12:45-13:10	Τεχνικές και Υλικά Εφαρμογής της ΠΚ **Α. Καποτά**
13:10-13:35	Λοιμώδεις Επιπλοκές της ΠΚ **Χ. Δημητριάδης**
13:35-14:00	Μη Λοιμώδεις Επιπλοκές της ΠΚ **Μ. Καλιεντζίδου**
14:00-14:25	Επιδημιολογία, Επιλογή, Επάρκεια της ΠΚ **Α. Ανδρίκος**
14:25-14:50	Συνταγογράφηση ΠΚ, Θεωρία και Παραδείγματα **Μ. Θεοδωρίδης**

Hall Aristotelis I — Σαββατο 21 Οκτωβριου

14:50-16:30 **ΕΛΑΦΡΥ ΓΕΥΜΑ**

16:30-19:00 **ΜΕΤΑΜΟΣΧΕΥΣΗ ΝΕΦΡΟΥ Ι**

Συντονιστές: **Γ. Μυσερλής, Μ. Δαρεμά**

16:30-16:55 Το Ανοσολογικό Εργαστήριο στη Μεταμόσχευση Νεφρού
Α. Βιττωράκη

16:55-17:20 Αξιολόγηση Δότη και Λήπτη Νεφρικού Μοσχεύματος
Μ. Δαρεμά

17:20-17:45 Κανονιστικό Πλαίσιο-Διαδικασία Μεταμόσχευσης
Δ. Ζαχαρούδη

17:45-18:10 Ιστοπαθολογία του Νεφρικού Μοσχεύματος
Γ. Λιάπης

18:10-18:35 Ανοσοκατασταλτικά Φάρμακα
Μ. Παπασωτηρίου

18:35-19:00 Ανοσοκατασταλτικά Σχήματα
Ε. Κασιμάτης

19:00-19:15 **ΔΙΑΛΕΙΜΜΑ ΚΑΦΕ**

19:15-20:55 **ΜΕΤΑΜΟΣΧΕΥΣΗ ΝΕΦΡΟΥ ΙΙ**

Συντονιστές: **Σ. Μαρινάκη, Ε. Ντουνούση**

19:15-19:40 Οξεία και Χρόνια Δυσλειτουργία του Νεφρικού Μοσχεύματος
Χ. Μελεξοπούλου

19:40-20:05 Παθολογικές Επιπλοκές της Μεταμόσχευσης Νεφρού
Γ. Τσούκα

20:05-20:30 Μεταμόσχευση Νεφρού στα Παιδιά
Σ. Σταμπουλή

20:30-20:55 Συζήτηση Κλινικών Περιπτώσεων
Σ. Μαρινάκη, Ε. Ντουνούση

Hall Aristotelis I — Κυριακη 22 Οκτωβριου

09:00-12:30 ΑΙΜΟΚΑΘΑΡΣΗ

Συντονιστές: **Σ. Παναγούτσος, Ε. Παπαχρήστου**

09:00-09:25	Επιδημιολογία και Αρχές Αιμοκάθαρσης **Σ. Παναγούτσος**
09:25-09:50	Ουραιμικές Τοξίνες και Γενικές Αρχές Συνταγογράφησης της Αιμοκάθαρσης **Μ. Γιαννοπούλου**
09:50-10:15	Μέθοδοι Αιμοκάθαρσης **Ζ. Σκαρλάτου**
10:15-10:40	Αγγειακή Προσπέλαση - Εκτίμηση της Λειτουργίας - Επιπλοκές **Ε. Παπαχρήστου**
10:40-11:05	Οξείες Επιπλοκές της Αιμοκάθαρσης **Μ. Διβάνη**
11:05-11:30	Χρόνιες Επιπλοκές της Αιμοκάθαρσης **Α. Σταυρουλόπουλος**
11:30-11:55	Λοιμώδεις Επιπλοκές – Εμβολιασμοί **Δ. Διβάνης**
11:55-12:30	Πρακτικά Παραδείγματα Συνταγογράφησης της Αιμοκάθαρσης **Κ. Αδαμίδης**

12.45 ΓΡΑΠΤΕΣ ΕΞΕΤΑΣΕΙΣ

ΕΠΙΣΤΗΜΟΝΙΚΟ ΠΡΟΓΡΑΜΜΑ

Ομιλητες - Προεδροι - Συντονιστες

Αδαμίδης Κωνσταντίνος, Νεφρολόγος, Επιστημονικός Συνεργάτης ΜΧΑ "ΒΙΟΝΕΦΡΟΣ", Αθήνα

Ανδρίκος Αιμίλιος, Διευθυντής ΕΣΥ, Νεφρολογική Κλινική, ΓΝ Ιωαννίνων "Γ. Χατζηκώστα", Ιωάννινα

Ανδρουλάκη Μαριάνθη, Επιμελήτρια Α΄Νεφρολογίας, Γενικό Νοσοκομείο Γρεβενών

Άντζα Χριστίνα, Επίκουρη Καθηγήτρια Παθολογίας, Γ' Πανεπιστημιακή Κλινική ΑΠΘ

Βιττωράκη Αγγελική, Διευθύντρια ΕΣΥ, Βιοπαθολόγος, Εργαστήριο Ιστοσυμβατότητας, Ανοσολογικό Τμήμα & Εθνικό Κέντρο Ιστοσυμβατότητας, ΓΝ "Γ. Γεννηματάς", Αθήνα

Γεωργιανός Παναγιώτης, Επίκουρος Καθηγητής Νεφρολογίας, Β΄ Νεφρολογική Κλινική ΑΠΘ, Νοσοκομείο "ΑΧΕΠΑ", Θεσσαλονίκη

Γιαμαλής Παναγιώτης, Νεφρολόγος, Διευθυντής ΕΣΥ, Α΄ Νεφρολογική Κλινική ΑΠΘ, ΓΝΘ "Ιπποκράτειο", Θεσσαλονίκη

Γιαννοπούλου Μυρτώ Αικατερίνη, Επιμελήτρια Α΄, Νεφρολογικό Τμήμα, "Αντώνιος Μπίλλης", ΓΝΑ "Ο Ευαγγελισμός - Οφθαλμιατρείο Αθηνών - Πολυκλινική", Αθήνα

Γιάννου Παναγιώτα, Επιμελήτρια Β΄, Νεφρολογικό Τμήμα, ΓΝΑ "Ιπποκράτειο", Αθήνα

Γούμενος Δημήτριος, Καθηγητής Παθολογίας - Νεφρολογίας, Διευθυντής Νεφρολογικού και Μεταμοσχευτικού Κέντρου, ΠΓΝ Πατρών

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Διβάνη Μαρία, Νεφρολόγος, Επιμελήτρια Β΄, Γενικό Νοσοκομείο Λάρισας

Διβάνης Δημήτριος, MD, MSc, PhD, Νεφρολόγος, Επιμελητής Α΄ Τμήμα Νεφρολογίας & Υπέρτασης, "ΑΧΕΠΑ", Θεσσαλονίκη

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Ομιλητες - Προεδροι - Συντονιστες

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Καποτά Αθανασία, Νεφρολόγος, Επικουρική Ιατρός, Νεφρολογική Κλινική, ΓΝ "Ιπποκράτειο", Αθήνα

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Κουφάκης Θεοχάρης, MD, PhD Assistant Professor in Internal Medicine Medical School, Aristotle University Thessaloniki, Greece

Κρίκη Πελαγία, Νεφρολόγος, Επιμελήτρια Α΄, Πανεπιστημιακή Νεφρολογική Κλινική, ΠΓΝ Αλεξανδρούπολης

Κώτσα Καλλιόπη, Αναπληρώτρια Καθηγήτρια Ενδοκρινολογίας– Διαβητολογίας, Ιατρική Σχολή ΑΠΘ, Τμήμα Ενδοκρινολογίας – Διαβήτη & Μεταβολισμού, Διαβητολογικό Κέντρο, Α΄ Παθολογική Κλινική Πανεπιστημιακό ΓΝ "ΑΧΕΠΑ", Θεσσαλονίκη

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Μανές Χρήστος, Παθολόγος με εξειδίκευση στο Σακχαρώδη Διαβήτη, Επιστημονικός Υπεύθυνος Τμήματος Διαβήτη και Διαβητικού Ποδιού, ΒΙΟΚΛΙΝΙΚΗ Θεσσαλονίκης, Εκπρόσωπος Ελλάδος στη Διεθνή Ομάδα Εργασίας για το Διαβητικό Πόδι, Πρόεδρος ΕΜΕΔΙΠ

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Ομιλητες - Προεδροι - Συντονιστες

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Μπαλάφα Όλγα, Επιμελήτρια Α΄, Νεφρολογική Κλινική ΠΝ Ιωαννίνων

Μπαμίχας Γεράσιμος, Md, Phd Νεφρολόγος, Συντονιστής Διευθυντής Νεφρολογικού Τμήματος, ΓΝ "Γ. Παπανικολάου", Θεσσαλονίκη

Μπαντής Χρήστος, Νεφρολόγος, Επιμελητής Α΄, ΓΝ "Γ. Παπανικολάου", Θεσσαλονίκη

Μπαχαράκη Δήμητρα, Νεφρολόγος, Διευθύντρια ΕΣΥ, Β' Προπεδευτική Παθολογική Κλινική ΠΓΝ "Αττικόν", Αθήνα

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Ξυδάκης Δημήτριος, Νεφρολόγος, Επιμελητής Α΄, Βενιζέλειο Νοσοκομείο Ηρακλείου Κρήτης

Παναγούτσος Στυλιανός, Καθηγητής Νεφρολογίας ΔΠΘ, Νεφρολογική Κλινική, ΠΓΝ Αλεξανδρούπολης

Παπαγιάννη Αικατερίνη, Καθηγήτρια Νεφρολογίας ΑΠΘ, Διευθύντρια Νεφρολογικής Κλινικής ΑΠΘ, ΓΝΘ "Ιπποκράτειο", Θεσσαλονίκη

Παπαδοπούλου Δέσποινα, Ειδικός Παθολόγος Διαβητολόγος, Διευθυντής ΕΣΥ Α΄ Παθολογική Κλινική Νοσοκομείο "ΑΧΕΠΑ", Θεσσαλονίκη

Παπάνας Νικόλαος, Καθηγητής Παθολογίας-Σακχαρώδους Διαβήτη,Υπεύθυνος Διαβητολογικού Κέντρου - Ιατρείου Διαβητικού Ποδιού, Β΄ Παθολογική Κλινική, Δημοκρίτειο Πανεπιστήμιο Θράκης, Πρόεδρος Ευρωπαϊκής Ομάδας Μελέτης Διαβητικού Ποδιού, Πανεπιστημιακό ΓΝ Αλεξανδρούπολης

Παπασωτηρίου Μάριος, MD, PhD, Επίκουρος Καθηγητής Παθολογίας - Νεφρολογίας, Νεφρολογική Κλινική ΠΓΝ Πατρών

Παπαχρήστου Ευάγγελος, Αναπληρωτής Καθηγητής Παθολογίας - Νεφρολογίας, Ιατρική Σχολή Πανεπιστημίου Πατρών

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Ομιλητες - Προεδροι - Συντονιστες

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Ρουμελιώτης Αθανάσιος, Νεφρολόγος, Τμήμα Νεφρολογίας και Υπέρτασης, Α' Παθολογική Κλινική Γενικό Νοσοκομείο "ΑΧΕΠΑ", ΑΠΘ, Θεσσαλονίκη

Σαμπάνης Χρήστος, Παθολόγος με εξειδίκευση στον σακχαρώδη διαβήτη. Διδάκτωρ ΑΠΘ Συνεργάτης του Διαβητολογικού Κέντρου Β΄ Προπαιδευτικής Παθολογικής Κλινικής, "Ιπποκράτειο" Νοσοκομείο, Θεσσαλονίκη

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Σκαλιώτη Χρυσάνθη, Νεφρολόγος, Επιμελήτρια Α', Νεφρολογική Κλινική και Μονάδα Μεταμόσχευσης Νεφρού, ΕΚΠΑ, Ιατρική Σχολή, ΓΝΑ "Λαϊκό", Αθήνα

Σκαρλάτου Ζωή, MD, MSc Νεφρολόγος, PROTYPO DIALYSIS CENTER, Θεσσαλονίκη

Σκούτας Δημήτριος, Ειδικός Παθολόγος -Διαβητολόγος, Διδάκτωρ Ιατρικής Σχολής ΔΠΘ, Υπεύθυνος. Παθολογικού Τομέα Κ.Α.Α "ΑΝΑΓΕΝΝΗΣΗ", Πρόεδρος Ελληνικής Εταιρείας Μελέτης και Εκπαίδευσης για το Σακχαρώδη Διαβήτη

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Σταυρουλόπουλος Αριστείδης, Νεφρολόγος, Διευθυντής Νεφρολογικού Ινστιτούτου Αθηνών NEPHROEXPERT, Διευθυντής IASYS Clinic και PAN Health Group

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Τσουχνικάς Ιωάννης, Νεφρολόγος, Νεφρολογική Κλινική ΑΠΘ, ΓΝΘ "Ιπποκράτειο", Θεσσαλονίκη

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Το EVRENZO™▼ ενδείκνυται για τη θεραπεία ενήλικων ασθενών με συμπτωματική αναιμία η οποία συσχετίζεται με χρόνια νεφρική νόσο (ΧΝΝ)[1]

SIMPLICITY THROUGH INNOVATION Evrenzo™ roxadustat ▼

▼Το φάρμακο αυτό τελεί υπό συμπληρωματική παρακολούθηση. Αυτό θα επιτρέψει το γρήγορο προσδιορισμό νέων πληροφοριών ασφάλειας. Ζητείται από τους επαγγελματίες υγείας να αναφέρουν οποιεσδήποτε πιθανολογούμενες ανεπιθύμητες ενέργειες. Βλ. παράγραφο 4.8 για τον τρόπο αναφοράς ανεπιθύμητων ενεργειών. **1. ΟΝΟΜΑΣΙΑ ΤΟΥ ΦΑΡΜΑΚΕΥΤΙΚΟΥ ΠΡΟΪΟΝΤΟΣ:** Evrenzo™ 20 mg επικαλυμμένα με λεπτό υμένιο δισκία. Evrenzo™ 50 mg επικαλυμμένα με λεπτό υμένιο δισκία. Evrenzo™ 70 mg επικαλυμμένα με λεπτό υμένιο δισκία. Evrenzo™ 100 mg επικαλυμμένα με λεπτό υμένιο δισκία. Evrenzo™ 150 mg επικαλυμμένα με λεπτό υμένιο δισκία. **2. ΠΟΙΟΤΙΚΗ ΚΑΙ ΠΟΣΟΤΙΚΗ ΣΥΝΘΕΣΗ**: Evrenzo™ 20 mg επικαλυμμένα με λεπτό υμένιο δισκία Κάθε δισκίο περιέχει 20 mg roxadustat. Evrenzo™ 50 mg επικαλυμμένα με λεπτό υμένιο δισκία Κάθε δισκίο περιέχει 50 mg roxadustat. Evrenzo™ 70 mg επικαλυμμένα με λεπτό υμένιο δισκία Κάθε δισκίο περιέχει 70 mg roxadustat. Evrenzo™ 100 mg επικαλυμμένα με λεπτό υμένιο δισκία Κάθε δισκίο περιέχει 100 mg roxadustat. Evrenzo™ 150 mg επικαλυμμένα με λεπτό υμένιο δισκία Κάθε δισκίο περιέχει 150 mg roxadustat. Έκδοχο(α) με γνωστή δράση: Κάθε επικαλυμμένο με λεπτό υμένιο δισκίο των 20 mg περιέχει 40,5 mg λακτόζης, 0,9 mg λάκας αργιλίου Allura Red AC και 0,21 mg λεκιθίνης σόγιας. Κάθε επικαλυμμένο με λεπτό υμένιο δισκίο των 50 mg περιέχει 101,2 mg λακτόζης, 1,7 mg λάκας αργιλίου Allura Red AC και 0,39 mg λεκιθίνης σόγιας. Κάθε επικαλυμμένο με λεπτό υμένιο δισκίο των 70 mg περιέχει 141,6 mg λακτόζης, 2,1 mg λάκας αργιλίου Allura Red AC και 0,47 mg λεκιθίνης σόγιας. Κάθε επικαλυμμένο με λεπτό υμένιο δισκίο των 100 mg περιέχει 202,4 mg λακτόζης, 2,8 mg λάκας αργιλίου Allura Red AC και 0,63 mg λεκιθίνης σόγιας. Κάθε επικαλυμμένο με λεπτό υμένιο δισκίο των 150 mg περιέχει 303,5 mg λακτόζης, 3,7 mg λάκας αργιλίου Allura Red AC και 0,84 mg λεκιθίνης σόγιας. **3. ΦΑΡΜΑΚΟΤΕΧΝΙΚΗ ΜΟΡΦΗ:** Επικαλυμμένα με λεπτό υμένιο δισκία (δισκία). Evrenzo™ 20 mg δισκία Ερυθρού χρώματος, ωοειδή δισκία (περίπου 8 mm × 4 mm) με το «20» χαραγμένο στη μία πλευρά. Evrenzo™ 50 mg δισκία Ερυθρού χρώματος, ωοειδή δισκία (περίπου 11 mm × 6 mm) με το «50» χαραγμένο στη μία πλευρά. Evrenzo™ 70 mg δισκία Ερυθρού χρώματος, στρογγυλά δισκία (περίπου 9 mm) με το «70» χαραγμένο στη μία πλευρά. Evrenzo™ 100 mg δισκία Ερυθρού χρώματος, ωοειδή δισκία (περίπου 14 mm × 7 mm) με το «100» χαραγμένο στη μία πλευρά. Evrenzo™ 150 mg δισκία Ερυθρού χρώματος δισκία σχήματος αμυγδάλου (περίπου 14 mm × 9 mm) με το «150» χαραγμένο στη μία πλευρά. **4. ΚΛΙΝΙΚΕΣ ΠΛΗΡΟΦΟΡΙΕΣ: 4.1 Θεραπευτικές ενδείξεις:** Το Evrenzo™ ενδείκνυται για τη θεραπεία ενήλικων ασθενών με συμπτωματική αναιμία η οποία συσχετίζεται με χρόνια νεφρική νόσο (ΧΝΝ). **4.3 Αντενδείξεις:** Το Evrenzo™ αντενδείκνυται στις εξής παθήσεις: • Υπερευαισθησία στη δραστική ουσία, στα φιστίκια, στη σόγια ή σε κάποιο από τα έκδοχα που αναφέρονται στην πλήρη ΠΧΠ • Τρίτο τρίμηνο της εγκυμοσύνης • Θηλασμός. **4.4 Ειδικές προειδοποιήσεις και προφυλάξεις κατά τη χρήση:** Καρδιαγγειακός κίνδυνος και κίνδυνος θνησιμότητας Συνολικά, έχει εκτιμηθεί ότι ο καρδιαγγειακός κίνδυνος και ο κίνδυνος θνησιμότητας για τη θεραπεία με roxadustat είναι συγκρίσιμοι με τον καρδιαγγειακό κίνδυνο και τον κίνδυνο θνησιμότητας για τη θεραπεία με ESA, βάσει δεδομένων από απευθείας σύγκριση αμφότερων των θεραπειών. Δεδομένου ότι, για τους μη αιμοκαθαιρόμενους ασθενείς με αναιμία σχετιζόμενη με ΧΝΝ, αυτός ο κίνδυνος δεν ήταν δυνατό να εκτιμηθεί με επαρκή βαθμό εμπιστοσύνης έναντι του εικονικού φαρμάκου, μια απόφαση για τη θεραπεία αυτών των ασθενών με roxadustat θα πρέπει να βασίζεται σε παρόμοια ζητήματα τα οποία θα εφαρμόζονταν πριν από τη θεραπεία με έναν ESA. Επιπλέον, έχουν προσδιοριστεί μερικοί παράγοντες που συντελούν στην επιβολή αυτού του κινδύνου, συμπεριλαμβανομένης της απουσίας ανταπόκρισης στη θεραπεία και της μετάβασης αιμοκαθαιρόμενων ασθενών που λαμβάνουν θεραπεία με ESA και βρίσκονται σε σταθερή κατάσταση. Σε περίπτωση απουσίας ανταπόκρισης, η θεραπεία με roxadustat δεν θα πρέπει να συνεχίζεται πέραν των 24 εβδομάδων μετά την έναρξη της θεραπείας. Το ενδεχόμενο μετάβασης ασθενών που υποβάλλονται σε αιμοκάθαρση, και οι οποίοι κατά τα άλλα παραμένουν σταθεροί υπό θεραπεία με ESA, πρέπει να αξιολογείται μόνο όταν υπάρχει έγκυρη κλινική αιτιολόγηση. Για μη αιμοκαθαιρόμενους ασθενείς με αναιμία σχετιζόμενη με ΧΝΝ που παραμένουν σταθεροί υπό θεραπεία με ESA, δεν ήταν δυνατή η εκτίμηση του κινδύνου, καθότι δεν έχει διεξαχθεί μελέτη για αυτούς τους ασθενείς. Η απόφαση για τη θεραπεία αυτών των ασθενών με roxadustat θα πρέπει να βασίζεται στην αξιολόγηση της σχέσης οφέλους-κινδύνου για τον μεμονωμένο ασθενή. Θρομβωτικά αγγειακά συμβάματα Ο αναφερόμενος κίνδυνος θρομβωτικών αγγειακών συμβαμάτων (TVE) θα πρέπει να σταθμίζεται προσεκτικά έναντι του οφέλους που θα προκύψει από τη θεραπεία με το roxadustat, ιδιαίτερα σε ασθενείς με προϋπάρχοντες παράγοντες κινδύνου για την εμφάνιση TVE, συμπεριλαμβανομένης της παχυσαρκίας και του προηγούμενου ιστορικού TVE [π.χ. εν τω βάθει φλεβική θρόμβωση (DVT) και πνευμονική εμβολή (PE)]. Η εν τω βάθει φλεβική θρόμβωση αναφέρθηκε ως συχνή και η πνευμονική εμβολή ως όχι συχνή μεταξύ των ασθενών σε κλινικές μελέτες. Στην πλειονότητά τους, τα επεισόδια εν τω βάθει φλεβικών θρομβώσεων και πνευμονικών εμβολών ήταν σοβαρά. Η θρόμβωση αγγειακής προσπέλασης (VAT) αναφέρθηκε ως πολύ συχνή μεταξύ των αιμοκαθαιρόμενων ασθενών με ΧΝΝ σε κλινικές μελέτες (βλ. παράγραφο 4.8). Στους αιμοκαθαιρόμενους ασθενείς με ΧΝΝ, τα ποσοστά της VAT στους ασθενείς που υποβάλλονταν σε θεραπεία με roxadustat ήταν υψηλότερα τις πρώτες 12 εβδομάδες μετά την έναρξη της θεραπείας, σε τιμές Hb πάνω από 12 g/dl και ποσοστιαίας αύξησης της Hb πάνω από 2 g/d εντός 4 εβδομάδων. Συνιστάται να γίνεται παρακολούθηση των επιπέδων της Hb και προσαρμογή της δόσης με χρήση των κανόνων προσαρμογής δόσης προκειμένου να αποφεύγονται επίπεδα Hb πάνω από 12 g/dl και αύξηση της Hb πάνω από 2 g/dl εντός 4 εβδομάδων. Οι ασθενείς με σημεία και συμπτώματα TVE θα πρέπει να αξιολογούνται άμεσα και να υποβάλλονται σε θεραπεία σύμφωνα με το πρότυπο περίθαλψης. Η απόφαση για την προσωρινή ή την οριστική διακοπή της θεραπείας θα πρέπει να βασίζεται στην αξιολόγηση της σχέσης οφέλους-κινδύνου για τον μεμονωμένο ασθενή. Επιληπτικές κρίσεις Συμβάματα επιληπτικών κρίσεων αναφέρθηκαν ως συχνά μεταξύ των ασθενών σε κλινικές μελέτες, οι οποίοι λάμβαναν roxadustat (βλ. παράγραφο 4.8). Το roxadustat θα πρέπει να χρησιμοποιείται με προσοχή σε ασθενείς με ιστορικό επιληπτικών κρίσεων (σπασμών), επιληψίας ή ιατρικών παθήσεων που συσχετίζονται με προδιάθεση για επιληπτική δραστηριότητα, όπως λοιμώξεις του κεντρικού νευρικού συστήματος (ΚΝΣ). Η απόφαση για την προσωρινή ή την οριστική διακοπή της θεραπείας θα πρέπει να βασίζεται στην αξιολόγηση της σχέσης οφέλους-κινδύνου για τον εκάστοτε ασθενή. Σοβαρές λοιμώξεις Οι πλέον συχνά αναφερόμενες σοβαρές λοιμώξεις ήταν η πνευμονία και οι ουρολοιμώξεις. Οι ασθενείς με σημεία και συμπτώματα λοίμωξης θα πρέπει να αξιολογούνται άμεσα και να υποβάλλονται σε θεραπεία σύμφωνα με το πρότυπο περίθαλψης. Σηψαιμία Η σηψαιμία ήταν μία από τις πλέον συχνά αναφερόμενες σοβαρές λοιμώξεις και συμπεριλάμβανε θανατηφόρα συμβάματα. Οι ασθενείς με σημεία και συμπτώματα σηψαιμίας (π.χ. λοίμωξη που εξαπλώνεται σε ολόκληρο τον οργανισμό με χαμηλή αρτηριακή πίεση και δυνητική οργανική ανεπάρκεια) θα πρέπει να αξιολογούνται αμέσως και να υποβάλλονται σε θεραπεία σύμφωνα με το πρότυπο περίθαλψης. Δευτεροπαθής υποθυρεοειδισμός Έχουν αναφερθεί περιστατικά δευτεροπαθούς υποθυρεοειδισμού με τη χρήση του roxadustat (βλ. παράγραφο 4.8). Αυτές οι αντιδράσεις ήταν αναστρέψιμες μετά τη διακοπή του roxadustat. Συνιστάται παρακολούθηση της λειτουργίας του θυρεοειδούς όπως ενδείκνυται κλινικά. Ανεπαρκής ανταπόκριση στη θεραπεία Η ανεπαρκής ανταπόκριση στη θεραπεία με roxadustat θα πρέπει να δίνει έναυσμα για την αναζήτηση των αιτιολογικών παραγόντων. Οι ανεπάρκειες θρεπτικών συστατικών θα πρέπει να διορθώνονται. Οι διαμεσολαβούσες λοιμώξεις, η λανθάνουσα απώλεια αίματος, η αιμόλυση, η τοξικότητα του αλουμινίου, οι υποκείμενες αιματολογικές ασθένειες ή η ίνωση του μυελού των οστών μπορεί επίσης να μειώσουν την ερυθροποιητική ανταπόκριση. Ο αριθμός των δικτυοερυθροκυττάρων θα πρέπει να θεωρείται μέρος της αξιολόγησης. Στην περίπτωση που οι τυπικές αιτίες μη ανταπόκρισης έχουν αποκλειστεί, και ο ασθενής εμφανίζει δικτυοερυθροκυτταροπενία, θα πρέπει να εξετάζεται η περίπτωση ελέγχου του μυελού των οστών. Χωρίς αντιμετωπίσιμη αιτία της ανεπαρκούς ανταπόκρισης, η θεραπεία με το Evrenzo™ δεν θα πρέπει να συνεχίζεται πέραν των 24 εβδομάδων θεραπείας. Ηπατική δυσλειτουργία Απαιτείται προσοχή όταν το roxadustat χορηγείται σε ασθενείς με μέτρια ηπατική δυσλειτουργία (κατηγορία B κατά Child-Pugh). Το Evrenzo™ δεν συνιστάται για χρήση σε ασθενείς με σοβαρής μορφής ηπατική δυσλειτουργία (κατηγορία C κατά Child-Pugh). Εγκυμοσύνη και αντισύλληψη Η θεραπεία με roxadustat δεν θα πρέπει να ξεκινά σε γυναίκες που σχεδιάζουν να μείνουν έγκυες, κατά τη διάρκεια της εγκυμοσύνης ή όταν κατά την εγκυμοσύνη διαγνωστεί αναιμία σχετιζόμενη με ΧΝΝ. Στις περιπτώσεις αυτές, θα πρέπει να ξεκινά εναλλακτική θεραπεία, εφόσον ενδείκνυται. Αν υπάρξει εγκυμοσύνη ενώ γίνεται χορήγηση του roxadustat, η θεραπεία θα πρέπει να σταματά και να ξεκινά εναλλακτική θεραπεία, εφόσον ενδείκνυται. Οι γυναίκες σε αναπαραγωγική ηλικία πρέπει να χρησιμοποιούν αντισύλληψη υψηλής αποτελεσματικότητας κατά τη διάρκεια της θεραπείας και για τουλάχιστον μία εβδομάδα μετά την τελευταία δόση του Evrenzo™. Κακή χρήση Η κακή χρήση μπορεί να οδηγήσει σε υπερβολική αύξηση του συμπιεσμένου όγκου κυττάρων. Αυτό μπορεί να συσχετιστεί με απειλητικές για τη ζωή επιπλοκές του καρδιαγγειακού συστήματος. Έκδοχα: Το Evrenzo™ περιέχει λακτόζη. Οι ασθενείς με σπάνια κληρονομικά προβλήματα δυσανεξίας στη γαλακτόζη, πλήρη ανεπάρκεια λακτάσης ή κακή απορρόφηση γλυκόζης-γαλακτόζης δεν πρέπει να πάρουν αυτό το φαρμακευτικό προϊόν. Το Evrenzo™ περιέχει τη χρωστική λάκα αργιλίου Allura Red AC (βλ. πλήρη ΠΧΠ) η οποία μπορεί να προκαλέσει αλλεργικές αντιδράσεις. Το Evrenzo™ περιέχει ίχνη λεκιθίνης σόγιας. Οι ασθενείς που είναι αλλεργικοί στα φιστίκια ή στη σόγια δεν θα πρέπει να χρησιμοποιούν το παρόν φαρμακευτικό προϊόν. **4.8 Ανεπιθύμητες ενέργειες:** Σύνοψη του προφίλ ασφάλειας Η ασφάλεια του Evrenzo™ αξιολογήθηκε σε 3 542 μη αιμοκαθαιρόμενους (NDD) ασθενείς και σε 3 353 αιμοκαθαιρόμενους (DD) ασθενείς με αναιμία και ΧΝΝ που έχουν λάβει τουλάχιστον μία δόση roxadustat. Οι πλέον συχνές (≥ 10%) ανεπιθύμητες αντιδράσεις που συσχετίστηκαν με το roxadustat είναι υπέρταση (13,9%), θρόμβωση αγγειακής προσπέλασης (12,8%), διάρροια (11,8%), περιφερικό οίδημα (11,7%), υπερκαλιαιμία (10,9%) και ναυτία (10,2%). Οι πλέον συχνές (≥ 1%) σοβαρές ανεπιθύμητες αντιδράσεις που συσχετίστηκαν με το roxadustat ήταν σηψαιμία (3,4%), υπερκαλιαιμία (2,5%), υπέρταση (1,4%) και εν τω βάθει φλεβική θρόμβωση (1,2%). Κατάλογος ανεπιθύμητων ενεργειών σε μορφή πίνακα. Οι ανεπιθύμητες αντιδράσεις που παρατηρήθηκαν κατά τη διάρκεια κλινικών μελετών και/ή μετά την κυκλοφορία του φαρμάκου παρατίθενται σε αυτήν την παράγραφο ανά κατηγορία συχνότητας. Οι κατηγορίες συχνότητας ορίζονται ως εξής: πολύ συχνές (≥ 1/10), συχνές (≥ 1/100 έως < 1/10), όχι συχνές (≥ 1/1 000 έως < 1/100), σπάνιες (≥ 1/10 000 έως < 1/1 000), πολύ σπάνιες (< 1/10 000), μη γνωστές (δεν μπορούν να εκτιμηθούν με βάση τα διαθέσιμα δεδομένα).

Πίνακας Ανεπιθύμητες ενέργειες

Κατηγορία/Οργανικό σύστημα σύμφωνα με τη βάση δεδομένων MedDRA (SOC)	Κατηγορία συχνότητας	Ανεπιθύμητη ενέργεια
Λοιμώξεις και παρασιτώσεις	Συχνές	Σηψαιμία
Διαταραχές του ενδοκρινικού συστήματος	Μη γνωστές	Δευτεροπαθής υποθυρεοειδισμός
Διαταραχές του μεταβολισμού και της θρέψης	Πολύ συχνές	Υπερκαλιαιμία
Ψυχιατρικές διαταραχές	Συχνές	Αϋπνία
Διαταραχές του νευρικού συστήματος	Συχνές	Επιληπτικές κρίσεις, κεφαλαλγία
Αγγειακές διαταραχές	Πολύ συχνές	Υπέρταση, θρόμβωση αγγειακής προσπέλασης (VAT)[1]
	Συχνές	Εν τω βάθει φλεβική θρόμβωση (DVT)
Διαταραχές του γαστρεντερικού	Πολύ συχνές	Ναυτία, διάρροια
	Συχνές	Δυσκοιλιότητα, έμετος
Διαταραχές του δέρματος και του υποδόριου ιστού	Μη γνωστές	Γενικευμένη αποφολιδωτική δερματίτιδα (DEG)
Διαταραχές του ήπατος και των χοληφόρων	Όχι συχνές	Υπερχολερυθριναιμία
Διαταραχές του αναπνευστικού συστήματος,του θώρακα και του μεσοθωράκιου	Όχι συχνές	Πνευμονική εμβολή
Γενικές διαταραχές και καταστάσεις της οδού χορήγησης	Πολύ συχνές	Περιφερικό οίδημα
Παρακλινικές εξετάσεις	Μη γνωστές	Θυρεοειδοτρόπος ορμόνη (TSH) αίματος μειωμένη

[1]Αυτή η ανεπιθύμητη ενέργεια συσχετίζεται με ασθενείς ΧΝΝ που υποβάλλονταν σε αιμοκάθαρση ενώ λάμβαναν roxadustat.

Περιγραφή επιλεγμένων ανεπιθύμητων ενεργειών: Θρομβωτικά αγγειακά επεισόδια: Στους μη αιμοκαθαιρόμενους ασθενείς με ΧΝΝ, τα συμβάματα ΕΦΘ ήταν όχι συχνά, εμφανιζόμενα στο 1,0% (0,6 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα του roxadustat και 0,2% (0,2 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα εικονικού φαρμάκου. Στους αιμοκαθαιρόμενους ασθενείς με ΧΝΝ, συμβάματα ΕΦΘ εμφανίστηκαν στο 1,3% (0,8 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα του roxadustat και 0,3% (0,1 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα των ESAs (βλ. παράγραφο 4.4). Στους μη αιμοκαθαιρόμενους ασθενείς με ΧΝΝ, πνευμονική εμβολή παρατηρήθηκε στο 0,4% (0,2 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα του roxadustat συγκριτικά με το 0,2% (0,1 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα του εικονικού φαρμάκου. Στους αιμοκαθαιρόμενους ασθενείς με ΧΝΝ, πνευμονική εμβολή παρατηρήθηκε στο 0,6% (0,3 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα του roxadustat συγκριτικά με το 0,5% (0,3 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα των ESAs (βλ. παράγραφο 4.4). Στους αιμοκαθαιρόμενους ασθενείς με ΧΝΝ, θρόμβωση αγγειακής προσπέλασης παρατηρήθηκε στο 12,8% (7,6 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα του roxadustat, συγκριτικά με το 10,2% (5,4 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα των ESAs (βλ. παράγραφο 4.4). *Επιληπτικές κρίσεις:* Στους μη αιμοκαθαιρόμενους ασθενείς με ΧΝΝ, επιληπτικές κρίσεις εμφανίστηκαν στο 1,1% (0,6 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα του roxadustat και στο 0,2% (0,2 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα του εικονικού φαρμάκου (βλ. παράγραφο 4.4). Στους αιμοκαθαιρόμενους ασθενείς με ΧΝΝ, επιληπτικές κρίσεις εμφανίστηκαν στο 2,0% (1,2 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα του roxadustat και στο 1,6% (0,8 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα των ESAs (βλ. παράγραφο 4.4). *Σηψαιμία:* Στους μη αιμοκαθαιρόμενους ασθενείς με ΧΝΝ, σηψαιμία παρατηρήθηκε στο 2,1% (1,3 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα του roxadustat, συγκριτικά με το 0,4% (0,3 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα του εικονικού φαρμάκου. Στους αιμοκαθαιρόμενους ασθενείς με ΧΝΝ, σηψαιμία παρατηρήθηκε στο 3,4% (2,0 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα του roxadustat, συγκριτικά με το 3,4% (1,8 ασθενείς με συμβάματα ανά 100 ασθενοέτη έκθεσης) στην ομάδα των ESAs (βλ. παράγραφο 4.4). *Δερματικές αντιδράσεις:* Γενικευμένη αποφολιδωτική δερματίτιδα, μέρος των σοβαρών δερματικών ανεπιθύμητων ενεργειών (SCARs), έχει αναφερθεί κατά τη διάρκεια της παρακολούθησης μετά την κυκλοφορία και έχει δείξει συσχέτιση με τη θεραπεία με roxadustat (μη γνωστή συχνότητα). *Αναφορά πιθανολογούμενων ανεπιθύμητων ενεργειών:* Η αναφορά πιθανολογούμενων ανεπιθύμητων ενεργειών μετά από τη χορήγηση άδειας κυκλοφορίας του φαρμακευτικού προϊόντος είναι σημαντική. Επιτρέπει τη συνεχή παρακολούθηση της σχέσης οφέλους-κινδύνου του φαρμακευτικού προϊόντος. Ζητείται από τους επαγγελματίες υγείας να αναφέρουν οποιεσδήποτε πιθανολογούμενες ανεπιθύμητες ενέργειες μέσω: Ελλάδα: Εθνικός Οργανισμός Φαρμάκων. Μεσογείων 284, GR-15562 Χολαργός, Αθήνα. Τηλ: + 30 21 32040380/337. Φαξ: + 30 21 06549585. Ιστότοπος: http://www.eof.gr. Κύπρος: Φαρμακευτικές Υπηρεσίες. Υπουργείο Υγείας. CY-1475 Λευκωσία. Τηλ: +357 22608607. Φαξ: + 357 22608669. Ιστότοπος: www.moh.gov.cy/phs. **7. ΚΑΤΟΧΟΣ ΤΗΣ ΑΔΕΙΑΣ ΚΥΚΛΟΦΟΡΙΑΣ:** Astellas Pharma Europe B.V., Sylviusweg 62, 2333 BE Leiden, Ολλανδία. **8. ΑΡΙΘΜΟΣ(ΟΙ) ΑΔΕΙΑΣ ΚΥΚΛΟΦΟΡΙΑΣ:** 12 x 1 επικαλυμμένα με λεπτό υμένιο δισκία. EU/1/21/1574/001 – 005: 36 x 1 επικαλυμμένα με λεπτό υμένιο δισκία: EU/1/21/1574/006 – 010. **9. ΗΜΕΡΟΜΗΝΙΑ ΠΡΩΤΗΣ ΕΓΚΡΙΣΗΣ/ΑΝΑΝΕΩΣΗΣ ΤΗΣ ΑΔΕΙΑΣ:** Ημερομηνία πρώτης έγκρισης: 18 Αυγούστου 2021. **10. ΗΜΕΡΟΜΗΝΙΑ ΑΝΑΘΕΩΡΗΣΗΣ ΤΟΥ ΚΕΙΜΕΝΟΥ:** 2 Ιουνίου 2023. Λεπτομερείς πληροφορίες για το παρόν φαρμακευτικό προϊόν είναι διαθέσιμες στον δικτυακό τόπο του Ευρωπαϊκού Οργανισμού Φαρμάκων: http://www.ema.europa.eu

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ΧΝΝ: χρόνια νεφρική νόσος. 1.Περίληψη Χαρακτηριστικών Προιοντος Evrenzo. 2. Sanghani NS, Haase VH. Adv Chronic Kidney Dis 2019; 26:253–266. EVZ_2022_0020_GR EVZ/ADV1/062023

ΦΕΡΝΟΥΜΕ ΤΟ ΑΥΡΙΟ, ΣΗΜΕΡΑ!

Με τις επενδύσεις μας η Ελλάδα πρωταγωνιστεί στην παραγωγή φαρμάκων

Είμαστε μια ελληνική φαρμακευτική εταιρεία, η οποία εξειδικεύεται στην παραγωγή ενέσιμων φαρμάκων. Εξάγουμε πάνω από το 80% της ετήσιας παραγωγής μας και έχουμε παρουσία σε 86 χώρες.

Τώρα, κάνουμε το επόμενο βήμα.
Υλοποιούμε το μεγαλύτερο επενδυτικό πρόγραμμα στην ελληνική φαρμακοβιομηχανία με επενδύσεις 356 εκατ. ευρώ σε τέσσερεις τομείς:

- στην αύξηση της παραγωγής μας σε τελικά φάρμακα
- στην παραγωγή πρώτων υλών φαρμάκων
- στην Έρευνα και Ανάπτυξη
- στη Βιοτεχνολογία

Δημιουργούμε 900 άμεσες και 3.700 έμμεσες νέες θέσεις εργασίας και συμβάλουμε στην αύξηση του ΑΕΠ κατά 1,3 δισ. ευρώ*.

Είμαστε μια μεγάλη ελληνική φαρμακοβιομηχανία.
Εξελισσόμαστε σε μια παγκόσμια δύναμη στο φάρμακο.

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Ελληνικά Φάρμακα με Παγκόσμια Εμβέλεια

* (μελέτη ΙΟΒΕ 2020)