

# Comparison between Berden and ANCA Risk Score classification models regarding their ability to predict short and long term outcome of ANCA-associated glomerulonephritis

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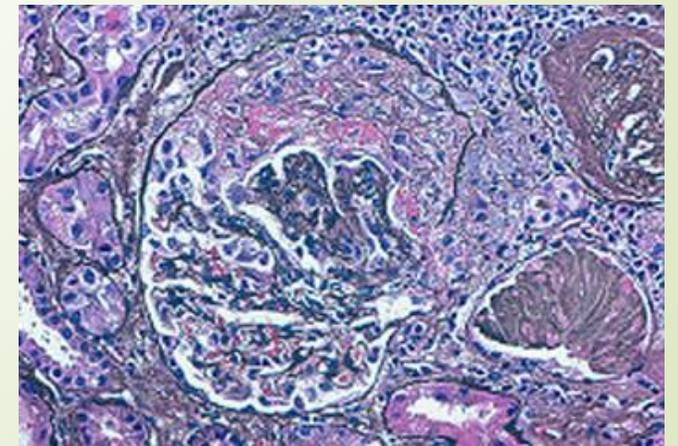
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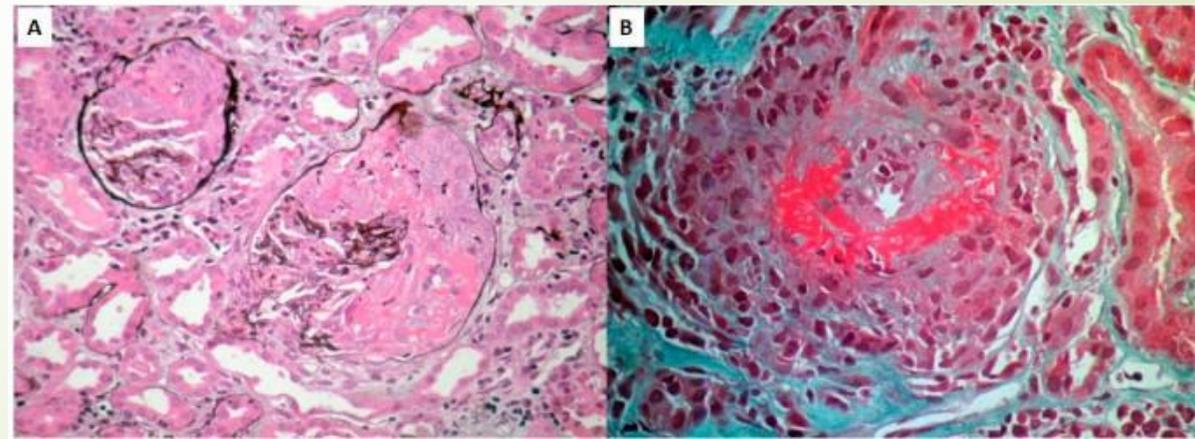
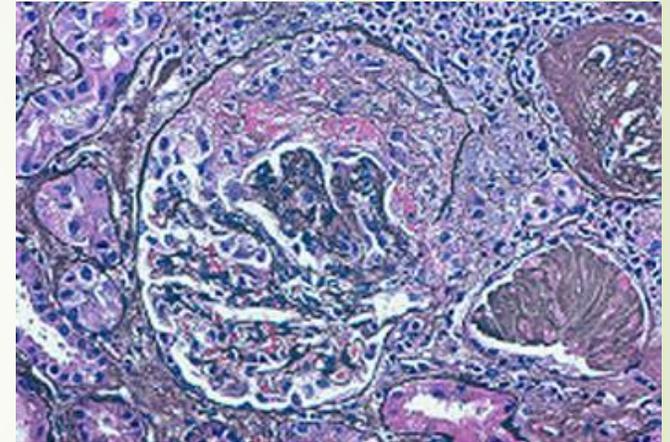
# ANCA-associated vasculitides (AAV)

- ▶ Represent a group of systemic diseases
- ▶ Characterized by inflammation and necrosis of small or medium-sized blood vessels
- ▶ Include granulomatosis with polyangiitis (GPA), eosinophilic granulomatosis with polyangiitis (EGPA) and microscopic polyangiitis (MPA)
- ▶ Accompanied by the presence of Anti-neutrophil cytoplasmic antibodies (ANCA) in the serum



# Renal lesions in ANCA associated vasculitis-glomerulonephritis (AAV/GN)

- ▶ Focal and segmental glomerular fibrinoid necrosis
- ▶ Tubulointerstitial inflammation and fibrosis
- ▶ Small vessel necrotizing vasculitis
- ▶ Crescents formation



# Renal Biopsy Classification Systems

## Berden classification

vs

## ANCA Renal Risk Score (RRS)

- Proposes four classes
- 1. **Focal** ( $\geq 50\%$  normal  $< 50\%$  injured glomeruli)
- 2. **Crescentic** ( $\geq 50\%$  active crescents)
- 3. **Mixed** ( $\geq 50\%$  injured glomeruli,  $< 50\%$  crescents,  $< 50\%$  global sclerosis)
- 4. **Sclerotic** ( $\geq 50\%$  global sclerosis)

- Is calculated according to the percentage of :
  - a) normal glomeruli (0 points if  $> 25\%$ , 4 points if 10-25%, 6 points if  $< 10\%$ ),
  - b) the percentage of interstitial fibrosis and tubular atrophy (IFTA: 0 points if  $\leq 25\%$ , 2 points if  $> 25\%$ )
  - c) the eGFR at diagnosis (0 points if  $> 15$  ml/min, 3 points if  $\leq 15$  ml/min)
- Proposes three classes
  1. **Low Risk** (Total of 0 points)
  2. **Medium Risk** ( 2-7 points)
  3. **High Risk** (8-11 points)

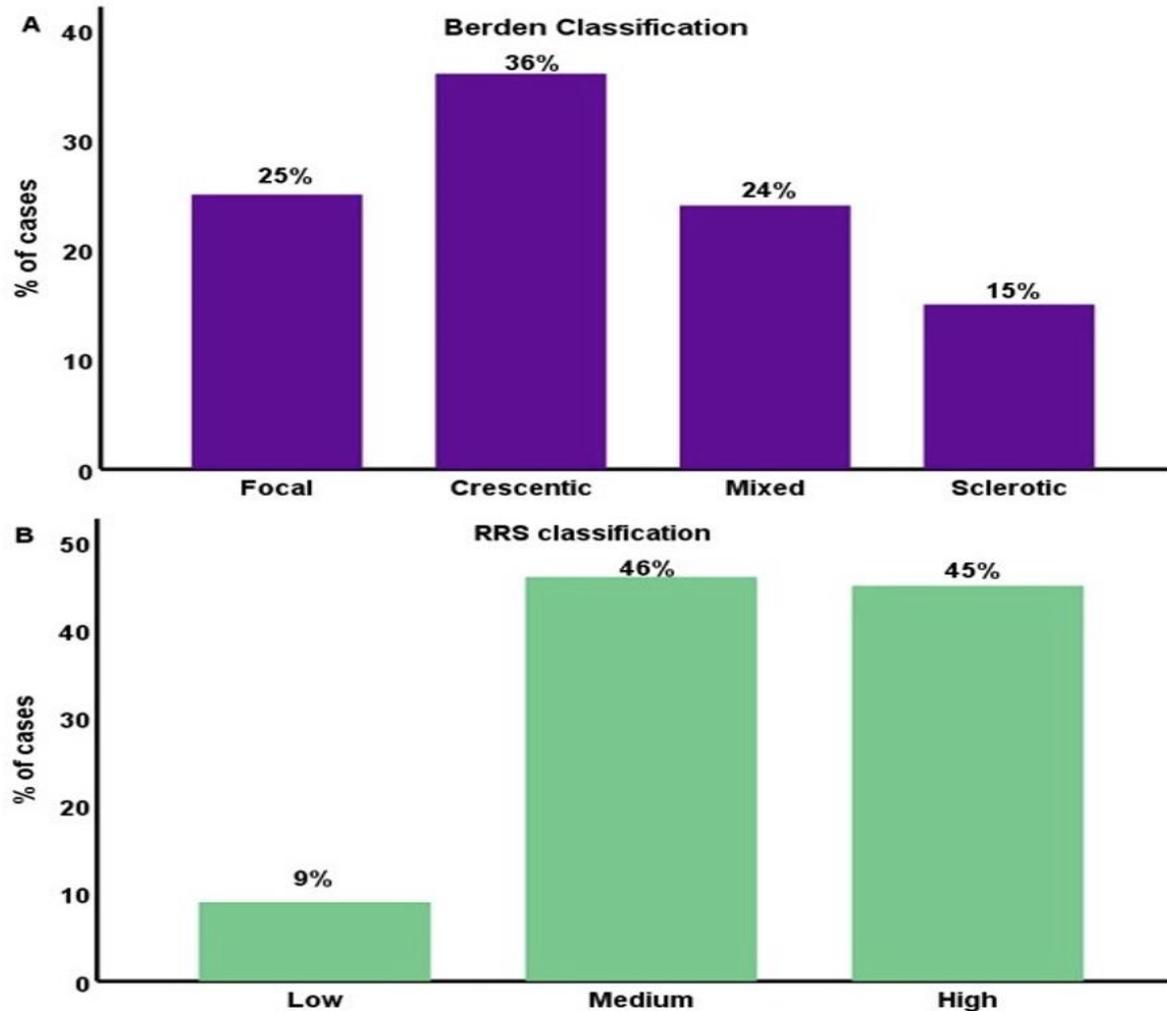
# Our prospective observational study

## Methods:

### N=94 AAV/GN patients

- Kidney biopsy
- Classification according to Berden and RRS
  - Same treatment protocol
  - 60 months of follow-up
- Renal function recorded at three (T3), six (T6) and sixty (T60) months of follow-up
  - Results compared to both classification systems

# Our Results



- According to Berden Classification, patients were grouped as Focal (n=24), Crescentic (n=35), Mixed (n=21) and Sclerotic (n=14)

- According to RRS, patients were classified as Low (n=8), Medium (n=47) and High (n=39) risk

# Our Results

		eGFR(ml/min/1.73m2)						No. of patients needing HD			
Berden	n	T0	T3	T6	T60	p(T0-T6)	p(T0-T60)	T0	T3	T6	T60
<u>Focal</u>	24	18.3(18)	27.6(28)	31.1(46)	19.1(42.4)	0.08	0.06	4(16.7%)	3(12.5%)	4(16.7%)	9(47.4%)
<u>Crescentic</u>	35	12.8(21)	21.7(27)	25.3(31)	12.3(35)	0.01	0.03	18(51.4%)	13(37.1%)	10(28.6%)	13(48%)
<u>Mixed</u>	21	14.5(18)	22.5(18)	25.8(33)	7.8(29.5)	0.001	0.005	4(19%)	2(9.5%)	1(4.8%)	8(50%)
<u>Sclerotic</u>	14	13(24)	18.8(31)	16.6(34)	9(38.5)	0.38	0.38	7(50%)	6(42.9%)	6(42.9%)	6(54%)
<b>p</b>		0.14	0.03	0.24	0.94			0.01	0.02	0.03	0.98

		eGFR(ml/min/1.73m2)						No. of patients needing HD			
RRS	n	T0	T3	T6	T60	p(T0-T6)	p(T0-T60)	T0	T3	T6	T60
<u>Low</u>	8	37.5(56)	53(37)	50(23)	45.5(22)	0.31	0.05	1(12.5%)	0	0	0
<u>Medium</u>	47	23.5(20)	35.1(23)	37.5(23)	32.6(41.3)	<0.0001	<0.0001	7(15.2%)	3(6.5%)	3(6.5%)	12(31.6%)
<u>High</u>	39	10.6(7)	15.4(16)	14.5(23)	5.7(15)	0.05	0.002	24(61.5%)	20(51.3%)	17(43.6%)	23(69.7%)
<b>p</b>		<0.0001	<0.0001	<0.0001	0.001			<0.0001	<0.0001	<0.0001	<0.0001



# Conclusions

- ▶ Both classification systems were able to discriminate patients with declining renal function or reaching ESKD during the acute phase of the disease, but RRS showed a clear superiority in predicting long term outcome of renal function
- ▶ The proportion of normal glomeruli in renal biopsy has indeed showed the best predictive ability for renal function outcome
- ▶ Tubulointerstitial pathology and clinical presentation, as they are included in RRS, seem to predict long term outcome
- ▶ Renal function can be improved even in patients with severe histopathology



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*Thank you*