Supplementary Material

Overexpression of Plasmalemmal Vesicle-Associated Protein-1 Reflects Glomerular Endothelial Injury in the Cases of Proliferative Glomerulonephritis With Monoclonal IgG Deposits

Running Head: Glomerular PV-1 overexpression in PGNMID

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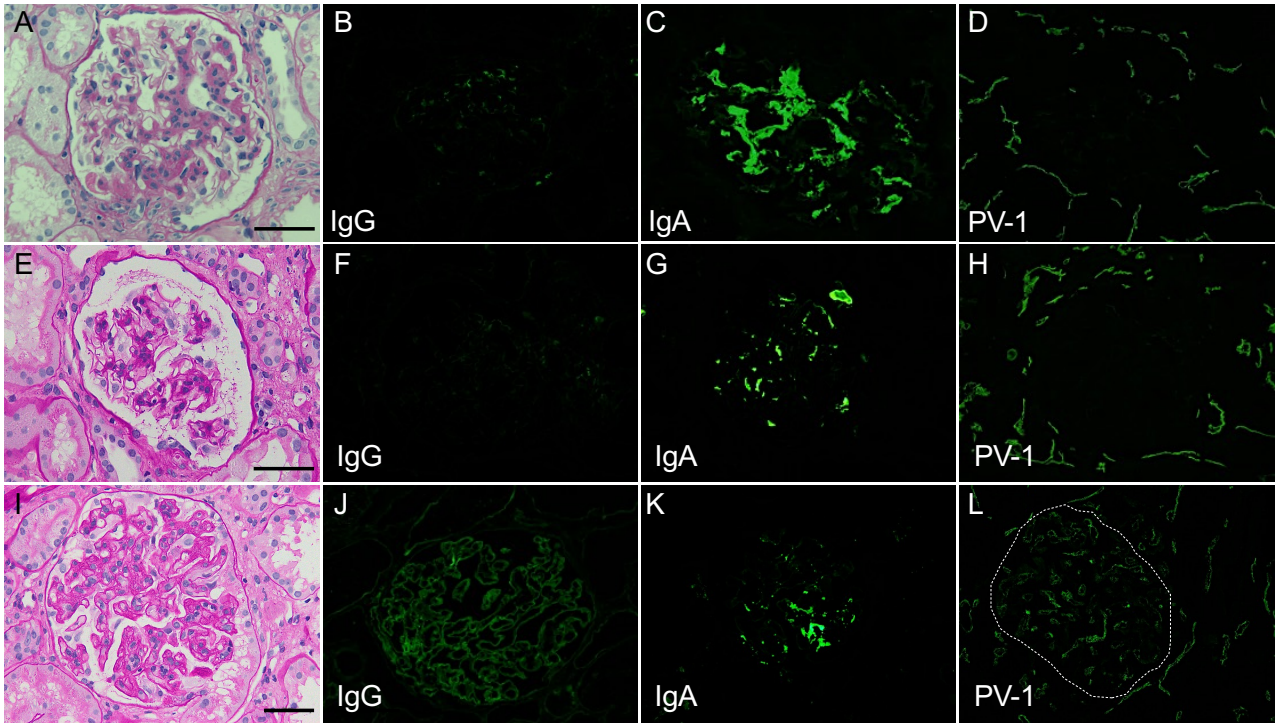
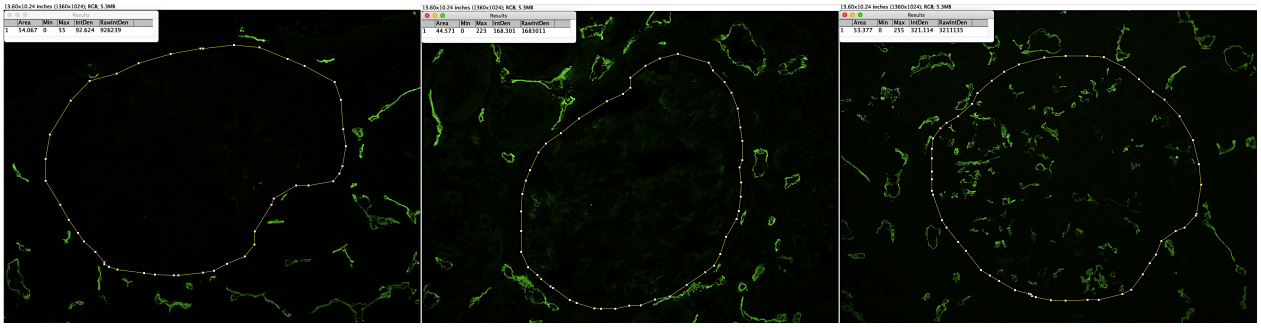
Supplementary Figure 1-5.

Supplementary Table 1-3.



Supplementary Figure 1. PGNMID is characterized by glomerular overexpression of PV-1. IgA nephropathy (A–D) showed no glomerular PV-1 expression (D). An allograft biopsy of the case revealed IgA nephropathy (E–H) without PV-1 expression in glomeruli (H) on the post operative day 1463, however, PGNMID (I–L) was complicated and PV-1 turned to be positive (L, dot circle) at the onset of on the post operative day 1549. (A, E, I) Periodic acid-schiff staining, black bars showed 50 μm.



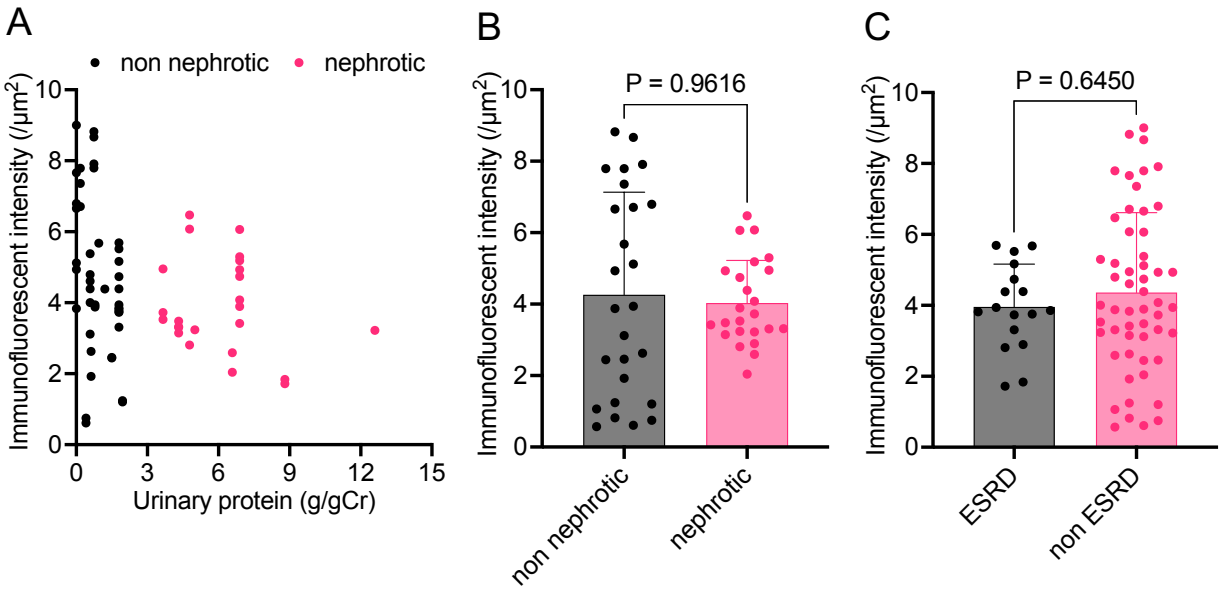
Area 54.06, Integrated density 92.62
Integrated density / area = 1.71

Area 44.57, Integrated density 168.30
Integrated density / area = 3.78

Area 53.37, Integrated density 322.11
Integrated density / area = 6.02

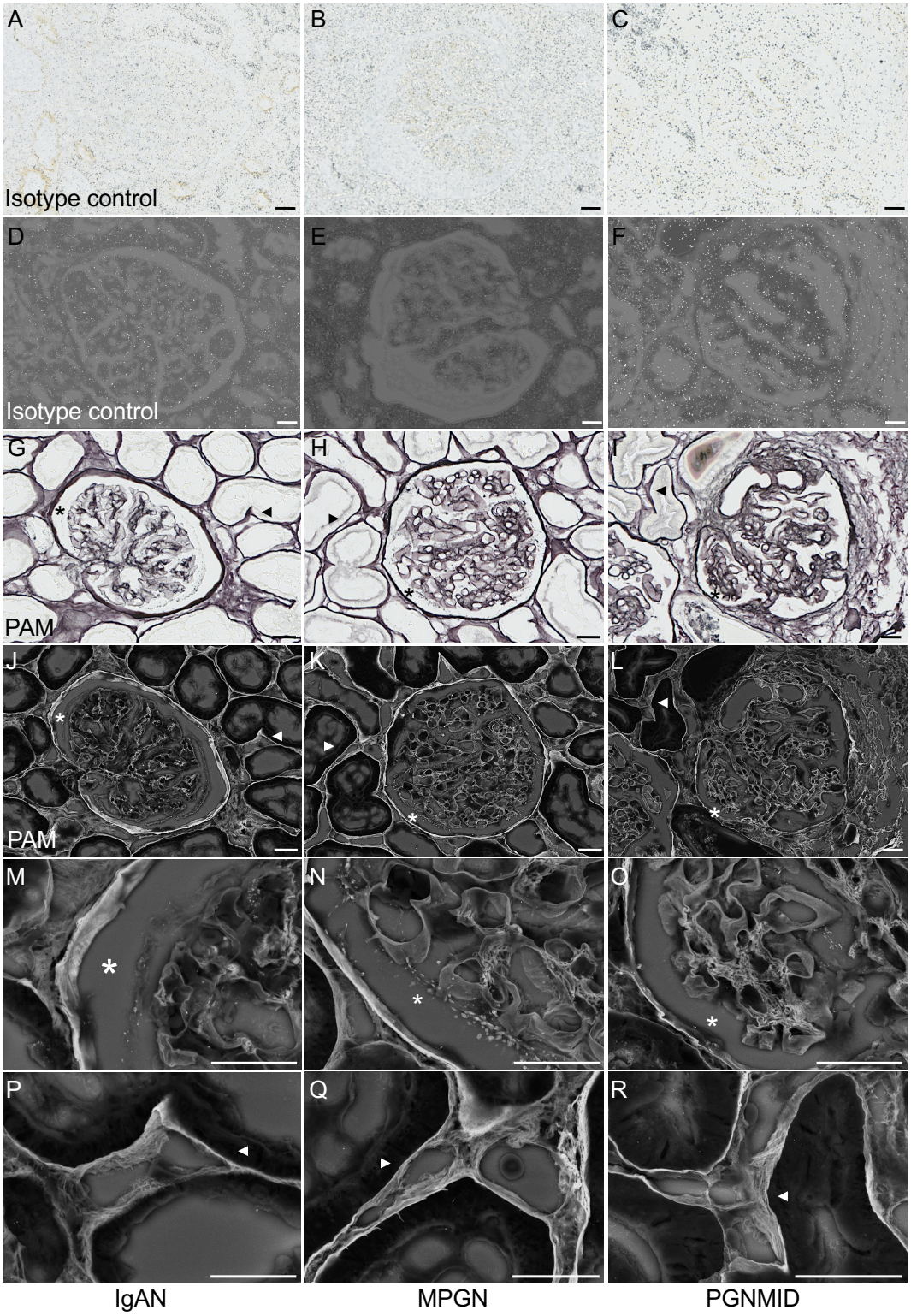
Supplementary Figure 2. Measurements of glomerular PV-1 intensity.

The glomerular PV-1 intensities (integrated density / μm^2) were measured with Image J.



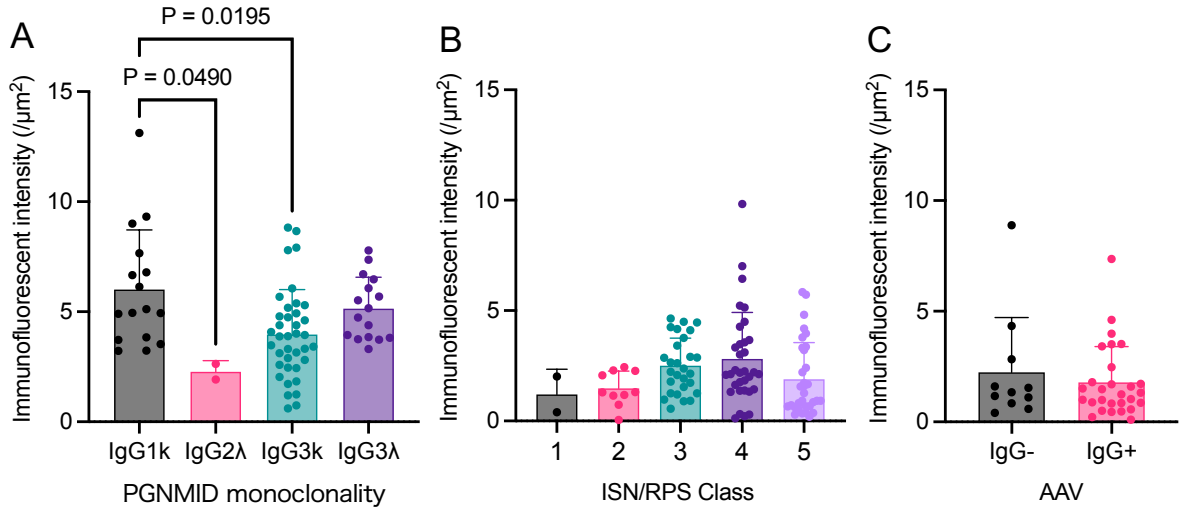
Supplementary Figure 3. The correlations between the PV-1 intensity and proteinuria or renal prognosis in PGNMID.

(A) Spearman r between the glomerular PV-1 intensity and proteinuria are -0.3754 (p=0.0131) (non nephrotic < 3 g/gCr) and -0.1117 (p=0.6034) (nephrotic > 3 g/gCr), respectively. There is no significant difference either between the non nephrotic and nephrotic group (B) or between the non ESRD and ESRD group (C). (n = 22 patients: one patient was excluded from the analysis, because of lacking data for urinary protein (g/gCr) at the biopsy in the database; Mean with SD, Mann–Whitney test).



Supplementary Figure 4. Low vacuum scanning electron microscopy analysis.

Negative control stain with isotype control for PV-1 antibody (A-C) and those LVSEM image (D-F). Periodic acid-methenamine silver (PAM) stain (G-I) and those LVSEM images (J-R). Asterix and arrow indicate the same lesions. Bars indicate 20 μm.



Supplementary Figure 5. Analysis for the PV-1 intensity and immunoglobin deposition.

PV-1 intensities and (A) monoclonal deposition type in PGNMID, (B) International Society of Nephrology (ISN) / Renal Pathology Society (RPS) Classification in lupus nephritis, and (C) IgG deposition negative (-) or positive (+) in antineutrophil cytoplasmic antibody (ANCA) associated vasculitis (AAV) (Mean with SD, Mann–Whitney test).

Supplementary Table 1. IgA nephropathy and MPGN characteristics

Characteristics	Value	
	IgA nephropathy	**MPGN**
Total case number	54	5
Age, year, median (range)	36 (16-72)	57 (14-76)
Sex, male, n (%)	31 (57.4)	3 (60)
U-pro, g/day or g/g.cr, median (range)	0.5 (0.03-5.9)	3.46 (0.91-7.2)
sCr, mg/dl, median (range)	0.81 (0.52-2.02)	1.27 (0.58-2.4)
U-OB, n (%)	48 (88.9)	1 (20)
Other, n (%)		Type I, 1 (20) III, 3(60) unknown, 1 (20)

MPGN, membranoproliferative glomerulonephritis; U-pro, urine protein; sCr, serum creatinine; U-OB; urine occult blood.

Supplementary Table 2. Lupus nephritis, MCD and FSGS characteristics

Characteristics	Value			
	Lupus nephritis	**MCD**	**FSGS primary**	**FSGS secondary**
Total case number	51	21	21	6
Age, year, median (range)	36 (16-66)	14 (3-64)	21 (1-68)	48.5 (13-68)
Sex, male, n (%)	8 (15.7)	13 (61.9)	11 (52.4)	4 (66.7)
U-pro, g/day or g/g.cr, median (range)	0.97 (0.01-10.6)	2.34 (0.05-23.1)	5.35 (0.49-38.3)	1 (0.63-2.07)
sCr, mg/dl, median (range)	0.64 (0.4-1.87)	0.45 (0.23-1.47)	0.9 (0.15-1.88)	1.56 (0.7-5.1)
U-OB, n (%)	23 (45.1)	5 (23.8)	12 (57.1)	1 (16.7)
Other, n (%)	ISN/RPS Class I, 1 (2) II, 5 (9.8) III, 13 (25.5) IV, 16 (31.4) V, 16 (31.4)			

MCD, minimal change disease; FSGS, focal segmental glomerulosclerosis; ISN/RPS Class, International Society of Nephrology (ISN) / Renal Pathology Society (RPS) Classification

Supplementary Table 3. MN, C3 glomerulopathy and AAV characteristics

Characteristics	Value			
	MN primary	**MN secondary**	**C3 glomerulopathy**	**AAV**
Total case number	15	9	6	16
Age, year, median (range)	68 (22-74)	60 (6-78)	16.5 (11-73)	68 (14-84)
Sex, male, n (%)	9 (60)	4 (44.4)	3 (50)	8 (50)
U-pro, g/day or g/g.cr, median (range)	2.66 (0.08-19.7)	5.14 (0.8-15.5)	0.53 (0.04-2.8)	0.61 (0.4-3.86)
sCr, mg/dl, median (range)	0.84 (0.53-7.0)	0.6 (0.4-1.27)	0.61 (0.43-1.55)	1.46 (0.78-9.72)
U-OB, n (%)	9 (60)	7 (77.8)	6 (100)	16 (100)
Other, n (%)	PLA2R, 4 (26.7) THSD7A, 0 (0)		C3 glomerulonepritis, 4 (66.7) Dense deposit disease, 2 (33.3)	MPO-ANCA, 16 (100)

MN, membranous nephropathy; AAV, antineutrophil cytoplasmic antibody (ANCA) associated vasculitis; PLA2R, phospholipase A2 receptor; THSD7A ,Thrombospondin type-1 domain-containing 7A; MPO, myeloperoxidase.