**Supplemental figure legends**

Supplemental Figure 1

Changes in the indicated parameters measured before and after intermediate-dose glucocorticoid therapy. Nearly all patients receiving glucocorticoid retained their renal function at the last follow-up (0.2-15.0 years), with significantly decreased urinary protein (p<0.005) and serum IgM levels (p<0.001). There was no significant change in renal function.

Supplemental Figure 2

Representative images from an IgMPC-TIN patient and control TIN patients showing renal immunohistochemical dual staining for IgM and CD138 (A-D) and renal immunohistochemical staining for IgG4 (E-H) and averaged numbers of infiltrating IgM-positive plasma cells per high-power field of renal interstitium in patients with IgMPC-TIN (n = 13), IgG4-RD (n = 12), TIN with Sjögren's syndrome (n = 15), other TIN (n = 17) (I). Images are from an IgMPC-TIN patient 1 (A, E), IgG4-realted kidney disease patient (B, F), Sjögren's syndrome patient (C, G) and drug related TIN patient (D, H). The photomicrographs show that the numbers of infiltrating IgM-positive plasma cells per high-power field of renal interstitium are markedly higher in patients with IgMPC-TIN than control patients with TIN. On the other hand, the photomicrographs also show that the numbers of infiltrating IgG4-positive plasma cells per high-power field of renal interstitium are markedly higher in the patient with IgG4-related kidney disease than in patients with IgMPC-TIN or other control patients with TIN. Bar = 20 μm. (I) Infiltration by IgM-positive plasma cells was significantly greater in IgMPC-TIN than IgG4-RD, TIN with Sjögren's syndrome or other TIN.
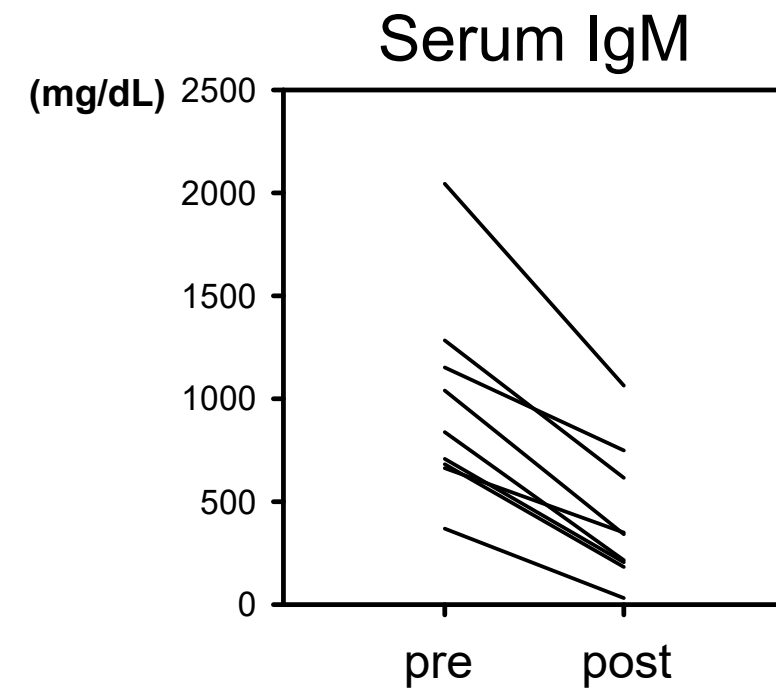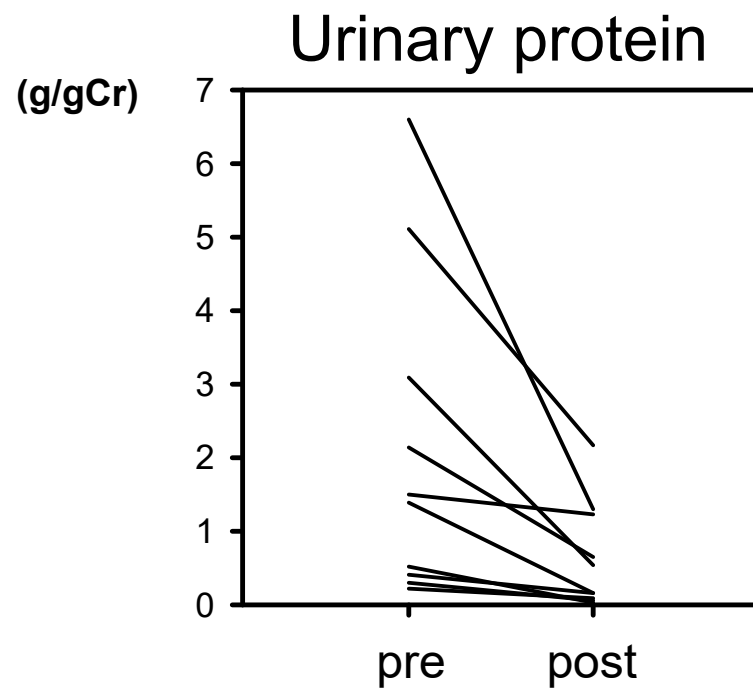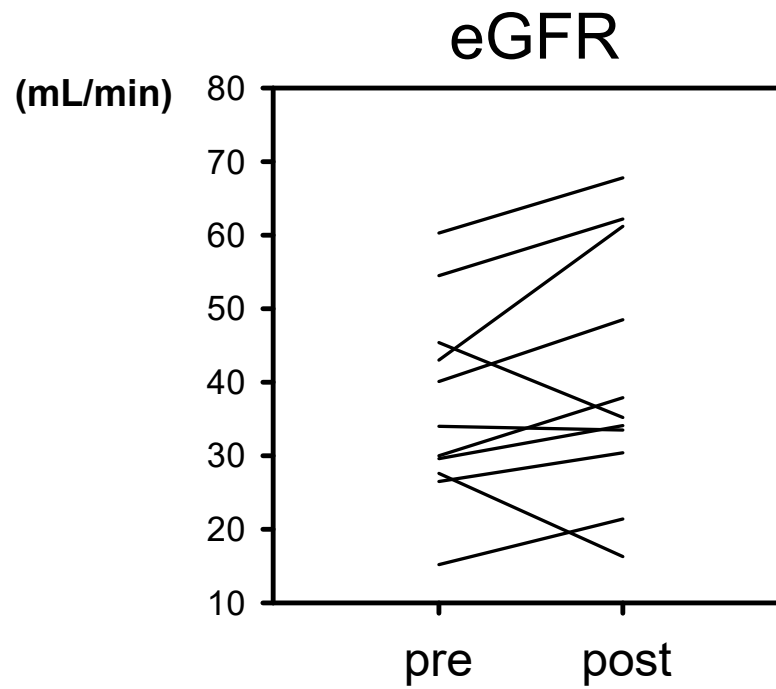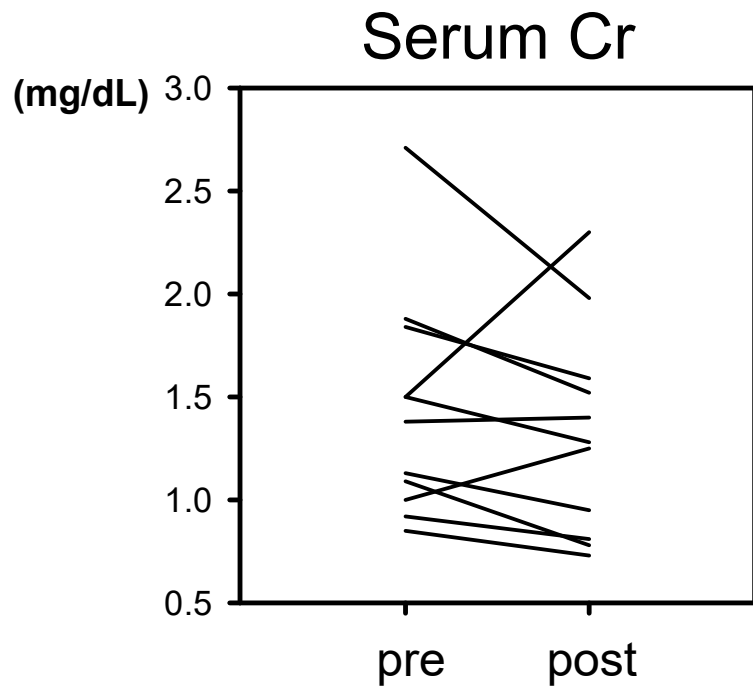
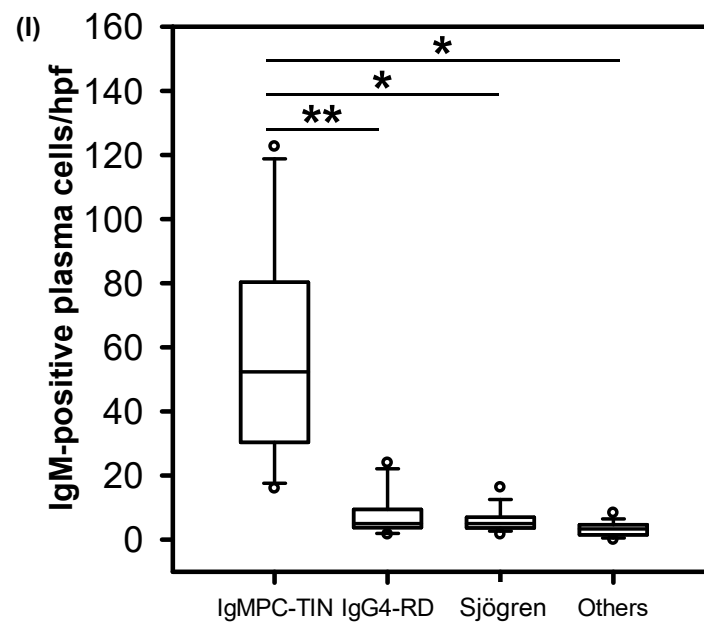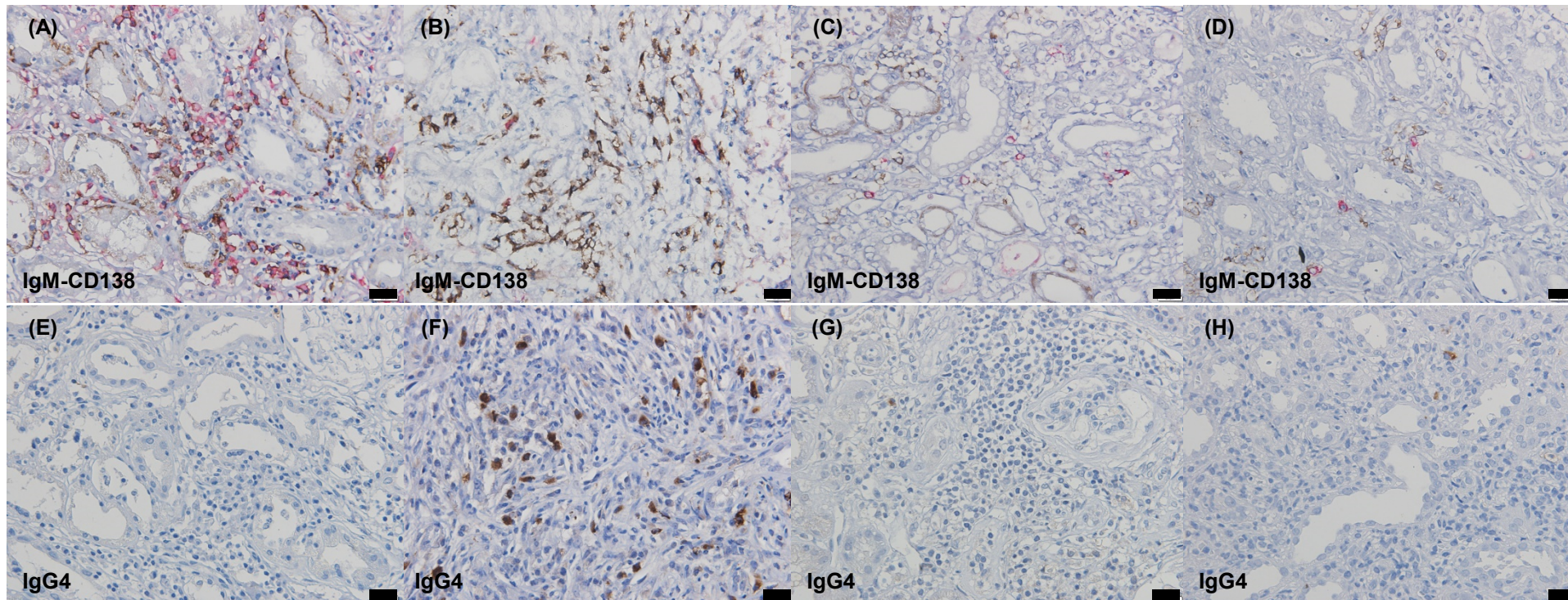*p<0.001. **p=0.001.

Supplemental Figure 3

Representative images from IgMPC-TIN patient 1 showing renal immunohistochemical staining for lambda (A) and kappa (B) light chain. The photomicrographs show that infiltrating plasma cells in the renal interstitium stained positively with both anti-lambda and anti-kappa light chain monoclonal antibodies; no monoclonality was confirmed. Bar = 20 μm.
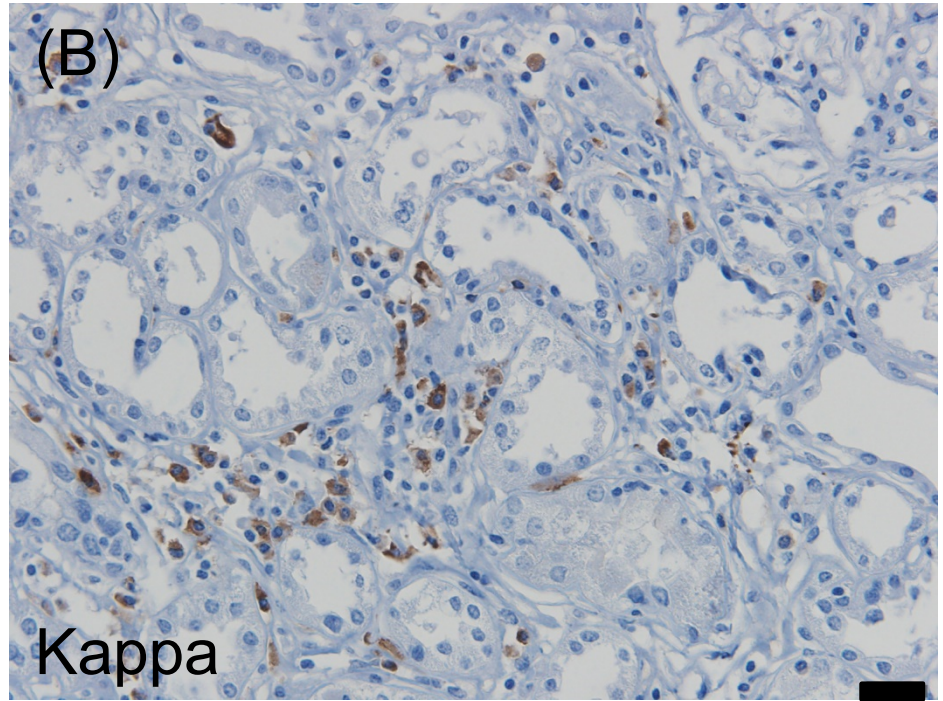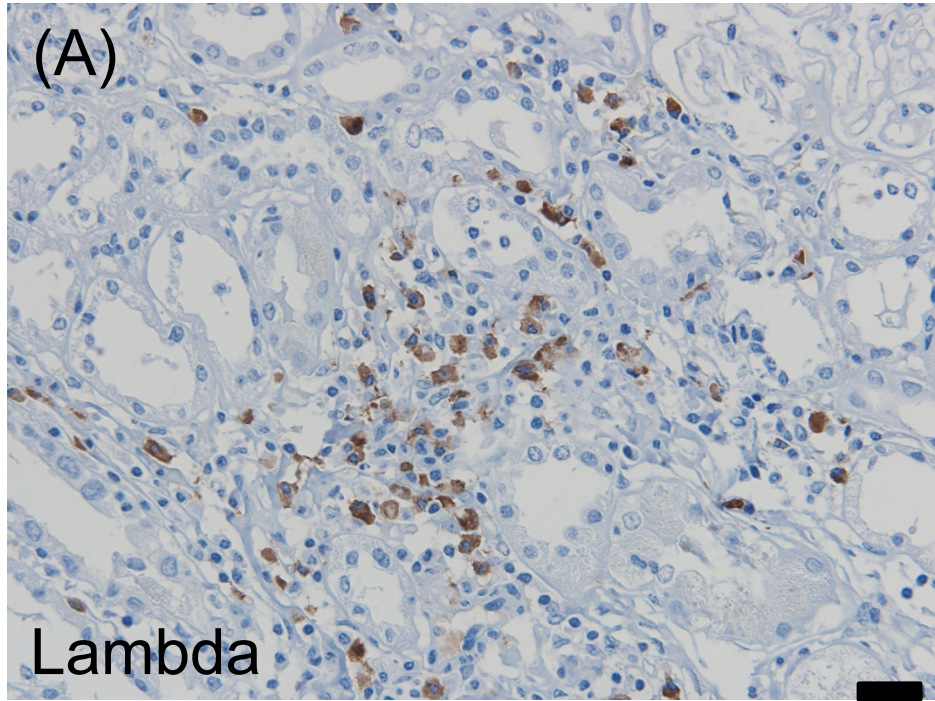
Supplemental Figure 4

ROC curve of the predictive value of the numbers of infiltrating IgM-positive plasma cells per high-power field for diagnosis of IgMPC-TIN. The optimal predictive cutoff number of infiltrating IgM-positive plasma cells was 13 per high-power field, with an area under the ROC curve of 0.99 (95% CI, 0.979-1.007; p<0.0001). The sensitivity and specificity were 100% (95% CI, 75.3%-100%) and 93.2% (95% CI, 81.3%-98.6%), respectively.
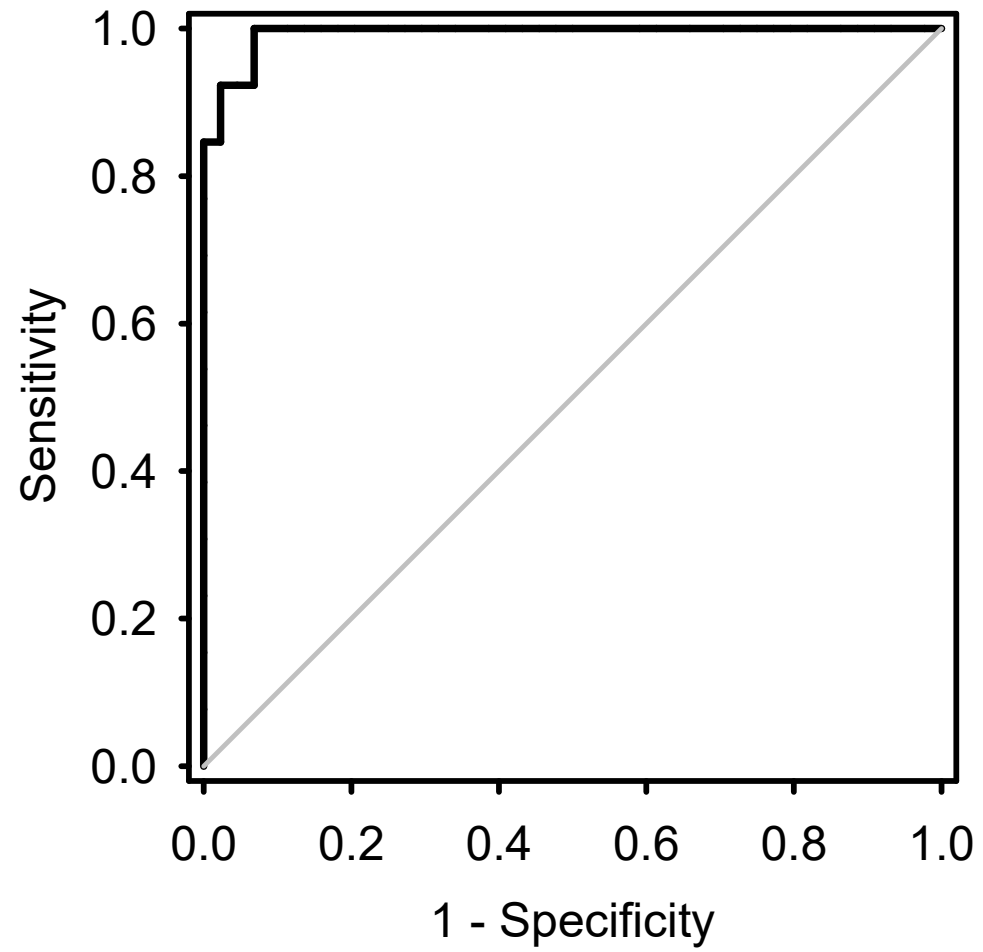
Supplemental Figure 1

(A) IgM-CD138
(B) IgM-CD138
(C) IgM-CD138
(D) IgM-CD138
(E) IgG4
(F) IgG4
(G) IgG4
(H) IgG4

(I)

Supplemental
Figure 2

(A) Lambda

(B) Kappa

Supplemental
Figure 3

Supplemental
Figure 4