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Local CD34-positive capillary decreased with the progression of lesion in respective area of kidney in mice

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Renal vasculatures have important roles in both homeostasis and pathology as kidney is a highly vascular organ. This study examined the pathological correlation between local capillary and lesion in respective area in the mouse kidneys. The glomerular lesions (GLs) of six-months old autoimmune disease-prone BXSB/MpJ-Yaa (Yaa) mice and tubulointerstitial lesions (TILs) of nine-weeks old C57BL/6 (B6) mice treated by unilateral ureteral obstruction (UUO) for seven days were focused in this study. Collected kidneys were examined by histopathological and electron microscopic techniques. Yaa mice developed severe autoimmune glomerulonephritis, and the number of capillary positive for CD34 was significantly decreased in GLs rather than TILs compared with healthy control mice. On the other hand, UUO-treated B6 mice showed severe TILs, and CD34-positive capillaries were significantly decreased in the TILs with the progression of fibrosis but not in glomerulus, compared with untreated kidneys. Infiltrated T-cells and macrophages were significantly increased in the kidneys of both disease models compared to respective controls ($P < 0.05$). Vascular corrosion cast examined under scanning electron microscopy revealed segmental absences of capillaries in GLs and TILs of Yaa and UUO-treated B6 mice, respectively. Peritubular capillary visualized by microfil rubber perfusion were also segmentally absent in UUO-treated B6 mice. Further, transmission electron microscopy revealed the alternations of capillary endothelium, such as thickened cytoplasm and detaching to capillary lumen. The number of CD34 positive glomerular capillary was negatively correlated with that of infiltrated T-cells, injured renal tubules, podocytes and total glomerular cells and size in Yaa ($P < 0.05$). In UUO-treated mice, the number of CD34-positive peritubular capillary negatively correlated with that of all examined histopathological parameters for inflammation and fibrosis in TILs ($P < 0.01$). Inflammatory process would affect the quantity and/or functional phenotype of local renal capillary, resulting in the progression of lesions in respective area of kidneys.

Biography

Abdul Masum has completed his MS degree from Bangladesh Agricultural University. He worked as Assistant Professor in the Faculty of Animal Science and Veterinary Medicine, Sher-e-Bangla Agricultural University. He has published more than nine papers in reputed journals. Now, he is a Japan Government Scholar and doing his PhD degree in Graduate School of Veterinary Medicine, Hokkaido University, Japan.

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