SIGNIFICANCE OF C4d DEPOSITION IN ANTIBODY-MEDIATED REJECTION OF ABO-INCOMPATIBLE RENAL TRANSPLANTATION

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Objectives: In ABO-incompatible (ABO-I) renal transplantation, C4d deposition in peritubular capillaries (PTC) are usually observed without antibody-mediated rejection (AMR). C4d deposition in PTC is not always a good indicator for AMR in ABO-I renal transplantation. The significance of C4d deposition in glomerular capillaries (GC) remains unknown especially in AMR. In this study, we retrospectively evaluated the significance of C4d deposition along PTC and GC in AMR of ABO-I renal transplantation.

Methods: From January 2000 to December 2004, 60 cases of ABO-I renal transplantation were performed at our institution. Of the recipients, 52 patients who underwent allograft biopsy within 3 months after transplantation were enrolled in this study. The diagnosis of AMR in ABO-I renal transplantation was based on the histological findings and/or clinical course. The histological criteria for AMR included diffuse peritubular capillaritis (dPTCis), glomerular changes (transplant glomerulitis, thrombotic microangiopathy (TMA) -like glomerulopathy, mesangiolysis), acute tubular necrosis (ATN), interstitial hemorrhage (IH), and cortical necrosis. C4d staining of PTC was considered positive only in cases with diffuse linear/granular and bright or greater. C4d staining of GC was considered positive if a linear/granular and bright or greater pattern was appeared in more than 50% (global) of total tufts in a glomerulus.

Results: AMR developed in 19 of the 52 (36%). In these 19 recipients, the histological findings revealed the glomerular changes in 13 (73%), dPTC in 12 (68%), ATN in 9 (47%), IH in 8 (42%), and cortical necrosis in 3 (16%). The sensitivity of C4d deposition for PTC and GC was 73% (14/19) and 58% (11/19) and the specificity was 57% (19/33) and 88% (29/33), respectively. In 11 recipients with GC (+) and AMR, 9 (81%) had the glomerular changes and in out of 5 TMA-like glomerulopathy developed.

Conclusion: C4d deposition in PTC was not a sufficient marker for AMR in ABO-I transplantation. However, C4d deposition in GC had a high specificity for AMR and might be a diagnostic tool for AMR in ABO-I renal transplantation.