Serum antibody screening for non-human leukocyte antigen antibodies associated with antibody-mediate rejection reveals significance of anti-collagen type I and type III antibodies

Sehoon Park¹, Seung-Hee Yang², Jiyeon Kim², Semin Cho³, Sang-il Min⁴, Jongwon Ha⁴, Yon Su Kim³, Kyung Chul Moon⁵, Eun Young Seong⁶, Hajeong Lee³

¹Division of Nephrology, Department of Internal Medicine, Korean Armed Forces Capital Hospital, Seongnam, Korea

²Kidney Research Institute, Seoul National University Hospital, Seoul, Korea

³Department of Internal Medicine, Seoul National University Hospital, Seoul, Korea

⁴Division of Transplantation, Department of Surgery, Seoul National University Hospital, Seoul, Korea

⁵Department of Pathology, Seoul National University Hospital, Seoul, Korea

⁶Department of Laboratory Medicine, Seoul National University Hospital, Seoul, Korea

Background: Additional study is warranted to determine the clinical significance of various non-human leukocyte antigen (HLA) antibodies on their association with the antibody-mediated rejection (ABMR) in kidney allografts.

Methods: The study included transplant recipients in one of the tertiary hospitals in Korea. We collected post-transplant sera from 68 ABMR, 67 T-cell mediated rejection (TCMR), and 83 controls without rejection cases and screened titers 39 non-HLA antibodies. We compared the non-HLA antibody titers among the study groups. We investigated their association with the risk of death-censored graft failure within the ABMR cases.

Results: The ABMR cases were diagnosed in later periods from transplantation and had a higher proportion of HLA-mismatched or HLA donor-specific antibody (DSA) positive cases when compared to the controls. Among the measured antibodies, anti-collagen type I ($P=0.001$) and type III antibody ($P<0.001$) titers were significantly higher in the ABMR cases when compared to the TCMR or no rejection controls. The both titers of anti-collagen type I (per 1 standard deviation [SD]; adjusted odds ratio [OR], 10.45; 95% confidence interval [CI], 2.52–66.62) and type III (per 1 SD; adjusted OR, 5.88; 95% CI, 1.84–28.98) antibody were significantly associated with presence of ABMR even after adjusting the presence of HLA-DSAs or other clinicopathologic findings. Within the ABMR group, a higher titer of anti-collagen type I (adjusted hazard ratio [HR], 1.82; 95% CI, 1.28–2.58) or type III (adjusted HR, 1.53; 95% CI, 1.14–2.07) antibody was associated with higher risk of death-censored graft failure.

Conclusions: Post-transplant anti-collagen I and collagen III antibodies may be novel non-HLA antibodies that are related to ABMR of kidney allografts.

Corresponding author: Sehoon Park

E-mail: mailofsehoon@gmail.com

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