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Anti-HLA antibody-mediated rejection in ABO-incompatible (ABOi) living donor kidney transplant (KT) patients.

Sung hyun SON, Kim KITAE, Hyukyong KWON, *Jin min KONG

Nephrology, BHS Hanseo hospital, Korea, South

Objectives : Antibody-mediated rejection (AMR) in ABOi KT patients can either be due to donor-specific anti-HLA antibody (DSA) or anti-blood group antibody (anti-ABO). The relative frequency and possible differential clinical features of these two types of AMR in ABOi KT patients has not been investigated.

Methods : Among 91 ABOi KT patients between 2007 and 2016 in our center, 11 (12.1%) patients developed clinical acute AMR. Since there is no histologic distinction between DSA- and anti-ABO-induced AMR, we assumed the causative antibody in each case based on anti-ABO level and DSA, measured in serum collected at the time of AMR. DSA was determined by luminex single antigen beads assay.

Results : Of these 11 cases of AMR, 5 were attributable to anti-ABO since anti-ABO titer was 16 or higher and DSA was undetectable at the time of rejection. Three cases were attributable to DSA since DSA was detectable and anti-ABO was low (≤ 8) during rejection. Another 2 cases with low (2) anti-ABO titer and undetectable DSA were assumed to be DSA-induced, since this low level of anti-ABO is unlikely to cause rejection and DSA can be undetectable in DSA-induced AMR by adsorption of Ab on graft, as frequently seen in ABO-compatible patient. One case with anti-ABO 8 and no detectable DSA was regarded as undetermined. The onset of AMR was within 2 weeks in all cases and comparable between two types of AMR. Initial anti-ABO titer was also not statistically different; median(range) 256(64-4096) in ABO-AMR and 64(16-256) in DSA-AMR. All the 5 patients with ABO-AMR had negative PRA before KT, whereas 4 of 5 patients with DSA-AMR had positive PRA before KT, and one DSA-AMR patient had persistent DSA before KT and at the time of AMR. All the AMR were recovered by treatment and no graft was lost to rejection.

Conclusions : We conclude that a significant proportion of AMR in ABOi KT are caused by DSA, and clinical features and possible differential therapeutic approach of these 2 types of AMR needs to be explored by further studies.

Keywords : Antibody mediated rejection, ABO incompatible transplantation, DSA, Anti-ABO