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FcγRIIb expression on B cells is associated with treatment efficacy for acute rejection after kidney transplantation

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Objectives : Fcγ receptors (FcγR) play a role in the acute rejection (AR) of organ transplants. FcγRIIBis the inhibitory FcγR expressed on B cells. Intravenous IgG (IVIG) and CD28 monoclonal antibody (mAb) have been shown to have immunomodulatory properties against AR.

Methods : Male F344 rats were used as kidney donors and Lewis rats as recipients to establish models of renal transplantation. Rats were divided into five groups: sham, AR-PBS, AR-IVIG, AR-PNGase F-IVIG, and AR-CD28. Serum creatinine (Scr), blood urea nitrogen (BUN), and urine protein content were determined. Inflammatory markers were measured by ELISA, FcγR by western blotting, and spleen B cell activation by flow cytometry.

Results : Scr, BUN, urinary protein content, levels of CRP, IL-10, TNF-α, IL-6, IL-8, and IgG were all increased in the AR-PBS group compared with the sham group (all $P<0.01$); these increases were partly reversed in the AR-IVIG, AR-PNGase F IVIG, and AR-CD28 groups (all $P<0.01$), with IVIG showing the better efficacy than PNGase F IVIG. Furthermore, blood and spleen FcγRIA and FcγRIIIA were increased by AR, while FcγRIIB expressions in splenic activated B cells and regulatory B cells were decreased; these changes were partly alleviated by all three treatments, with IVIG having the better effect than PNGase F IVIG.

Conclusions : We observed an association between B cell-expressed FcγRIIB and the treatment efficacy for AR after kidney transplantation in rats.

Keywords : renal transplantation; acute rejection; immunoglobulin G; Fcγ receptors; CD28