Activating KIR gene profile of renal transplant recipients confers protection against CMV infection

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Introduction

Reactivation of Cytomegalovirus is one most frequent viral complication that affects renal transplant recipients. In this regard, role of NK cells becomes important by virtue of their antiviral activities as well as the fact that currently used immunosuppressive drugs significantly impair T cells. Functioning of these NK cells are regulated by series of receptors known as Killer Immunoglobulin like receptors (KIR) that exists in activating and inhibitory forms. Here, we assessed whether KIR gene profile of kidney transplant recipients influence the rate of CMV reactivation after transplantation.

Method

A total of 192 renal transplant recipients were genotyped for a set of 16 KIR genes by a Luminex based multiplex KIR genotyping assay. Humans have various combinations of these 16 genes that normally segregate in two haplotypic forms – ‘A’ (containing 1 activating receptor gene) and ‘B’ (containing 2-6 activating receptor genes). PCR based method was used for CMV reactivation assessment. Logistic regression analysis was performed to assess the association of recipient KIR gene profile with CMV reactivation.

Results

An activating KIR gene profile of the recipient was found significantly associated with protection from CMV infection. A recipient KIR gene profile carrying Haplotype B (p=0.02), ≥5 activating genes (0.01) or presence of 2DS2 activating KIR (0.01) were significantly associated with low rate of CMV reactivation.

Conclusions

Our findings strongly support the role of NK cells in general and that of activating KIR profile in particular in the immune surveillance against cytomegalovirus after renal transplantation.