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Usefulness of valacyclovir prophylaxis for preventing cytomegalovirus infection after anti-thymocyte globulin treatment as antirejection therapy

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Background: Cytomegalovirus (CMV) infection is one of the most critical factor that affect graft and patient survival after kidney transplantation. Anti-thymoglobulin (ATG) treatment for acute T-cell mediated rejection can decrease cellular immunity, which can raise the risk of CMV infection.Therefore,prophylaxis for CMV infection along ATG treatment is crucial, but the regimen varies among transplant center. We purposed to evaluate the effect of maintenance valacyclovir universal prophylaxis against CMV infection after intravenous ganciclovir injection during anti-thymoglobulin (ATG) administration as anti-rejection therapy.

Methods: We retrospectively analyzed 59 kidney transplant recipients (KTR),who receiving ATG treatment for steroid resistant acute rejection. All patients received intravenous ganciclovir (2.5mg/kg q 12hr) during ATG injection (1.5mg/kg/d) for a week, and serum CMV PCR test was follow-up on D7, 1, 3, 6, 9, and 12 months after ATG injection initiation. Fifteen patients received maintenance valacyclovir prophylaxis (per oral 2g qid) for CMV prophylaxis just after end of the ATG injection belonged to study group (VAL). History control group (CON, n=34) consists of patients who discontinued antiviral agent just after end of the ATG injection. The primary outcome was incidence of CMV infection. The secondary outcomes were incidence of subsequent acute rejection and graft survival rate.

Results: : No significant differences were found among the groups in demographic characteristics at the time of ATG injection. CMV seropositivity status at pre-transplantation or immunosuppressant regimen before ATG treatment also showed no difference. In VAL group, median duration of valacyclovir administration was 25.5 ± 0.7 days. The incidence of CMV infection was lower in VAL group (2/15, 13.3%) compared to CON group (20/34, 58.8%). Prophylaxis with maintenance valacyclovir after ATG treatment reduced the incidence of CMV infection, significantly. (p=0.003). A one-year-CMV-free survival rate was higher in VAL group compared to control group. (80% Vs 38.6%, p=0.009). In CONT group, all CMV infection occurred within first 3 months after ATG treatment, whereas all the case of CMV infection occurred later, after discontinuation of valacyclovir on VAL group. (CONT 34.8 ± 19.2 Vs VAL 101 ± 33.9, p=<0.001). Graft failure also occurred more less in VAL group (5/15, 33.3%), compared to 67.6% (26/34) in CON group (p=0.025). But there was no difference of incidence of subsequent rejection after ATG treatment. (CONT 29.4% (10/34) Vs VAL 26.7% (4/15), p>0.999*).* There was no difference the incidence of other than CMV infection, repeated rejection, and graft survival.

Conclusion: Valacyclovir maintenance prophylaxis after ATG treatment is effective in reducing CMV infection, also improve CMV-free survival. CMV prophylaxis with valacyclovir after ATG therapy can reduce CMV infection.

Keywords: anti-thymocyte globulin, CMV prophylaxis, kidney transplantation , valacyclovir