Background

Cytomegalovirus (CMV) infections have a significant impact on morbidity and mortality of solid organ transplant (SOT) recipients. Acquisition of CMV resistance is an emerging problem. It has been reported following both universal prophylaxis and preemptive antiviral therapy. Risk factors associated for CMV resistance are not well defined.

Methods

We selected SOT recipients who underwent CMV resistance testing between 1/2010 and 3/2016 and divided them into: group 1 – cases with genotypic resistance, group 2 – cases with clinical resistance (no genotypic resistance), group 3 – patients with CMV viremia in whom resistance was not suspected.

We performed a 1:2:2 matched case-control study (11:22:22 recipients matched by age). We used ANOVA and nonparametric tests (Kruskal-Wallis) for between group comparisons (p<0.05).

Results

Group 1 compared with group 2 and 3 had:
- higher mean prednisone (p=0.01) and tacrolimus levels (p=0.03) in the 30 days before resistance testing
- did not respond to antiviral therapy (p<0.0001)
- had higher rate of concomitant fungal infections (p=0.03).

No difference was seen among groups for:
- duration of antiviral prophylaxis prior to infection
- time from transplant to first viremia
- rate of viremia while on antiviral prophylaxis
- rate of end-organ disease.
- graft loss
- overall survival.

Conclusions and Future Directions

- CMV resistance is an emerging clinical problem.
- High degree of immunosuppression (reflected by higher rates of concomitant infections, high tacrolimus levels and use of high-dose prednisone) is an important and potentially modifiable risk factor for emergence of CMV resistance.
- Persistent CMV infection should trigger resistance testing.

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References