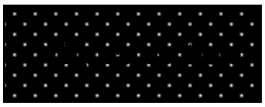

FREQUENCY OF CYTOMEGALO VIRUS IGM AND IGG IN PRE RENAL TRANSPLANT DONORS AND RECIPIENTS

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Abstract

One of the most opportunistic infection in kidney transplant recipients is Cytomegalovirus. This study was conducted to find the frequency of cytomegalovirus IgM and IgG in kidney transplant donors and recipients.

Methods: We carried out retrospective analysis of laboratory values of cytomegalovirus IgG and IgM antibodies of all donors and recipients presented from 2006 to 2013 to National Institute of Kidney diseases Sheikh Zayed Hospital Lahore Pakistan.

Results: Total no. of patients were 410 (205 donors and 205 recipients). Among recipients 169 (82%) were male and 36 (18%) female while among donors 125 (60%) were male and 80(40%) female. Total 05 (2.4 %) recipients were CMV IgG negative and 03 (1.4%) CMV IgM positive. Out of two hundred five recipients 200 (98%) were IgG positive and 202(99%) were IgM negative. All the donors were CMV IgM negative and CMV IgG positive.

Conclusion: There is very high frequency of CMV IgM and IgG positivity in donors and recipient of renal transplant in our population so we should consider prophylactic therapy.

Keywords: CMV, Renal Transplant, Prophylactic Therapy.

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Introduction

Cytomegalovirus (CMV) is a beta herpes virus; it has double – strand DNA. It was initially isolated from patients with congenital cytomegalic inclusion disease.

CMV is transmitted congenitally from mother to child. CMV is present in breast milk, saliva, feces, and urine.[1] In late adolescence and young adulthood CMV is transmitted through semen and cervical secretions. Another major source of transmission is transfusion of whole blood or blood products.

After organ transplant CMV can be transmitted through infected donor or reactivation of latent infection of recipient.[2,3]

Once infected it remains silent. Reactivation occurs when T-lymphocyte mediated immunity is compromised for example after organ transplant due to immunosuppression.[2]

Cytomegalovirus presents in various ways, ranging from asymptomatic infection or mononucleosis type infection to disseminated involvement. The presentation may be with pyrexia and loss of appetite rarely with decrease in leukocyte and platelet count, inflammatory response to gastrointestinal tract, lungs and liver. Occasionally it may involve retina and brain.[3, 4]

Seropositive recipients are at risk for CMV reactivation irrespective of donor status. Recipients with absent cytomegalovirus antibodies (R-) and donors with cytomegalovirus antibodies (D+) have a big threat to develop tissue – invasive, recurrent and ganciclovir resistant cytomegalovirus. Hence, all donors and recipients must be evaluated for cytomegalovirus disease. They should get either prophylaxis or preemptive monitoring and therapy.[5]

A number of studies regarding prevalence of CMV in general population and renal transplant donors and recipients in developed countries. There are only few studies from developing countries.

In this study frequency of CMV IgM and IgG among kidney transplant recipients and donors was studied to see the magnitude of disease. If this frequency is high then we must plan for CMV prophylaxis to every transplant recipient which is currently not practiced in Pakistan.

Therefore retrospectively we studied the frequency of CMV IgM and IgG in renal transplant donors and recipient at National Institute of Kidney diseases Sheikh Zayed Hospital Lahore Pakistan.

Material and Methods

We did retrospective analysis of all donors and recipient presented from 2006 to 2014 at National Institute of Kidney diseases Sheikh Zayed Hospital Lahore Pakistan. Both male and female donors and recipients were included with age limit up to 65 years.

Laboratory values of cytomegalovirus IgG and IgM antibodies of all donors and recipients were evaluated. Antibody levels were found by enzyme-linked immunosorbant assay (ELISA) method.

Results

Total no of patients were 410 (205 donors and 205 recipients). Among recipients 169 (82%) male and 36 (18%) were female and among donors 125 (60%) male and 80 (40%) were female (Figure 1).

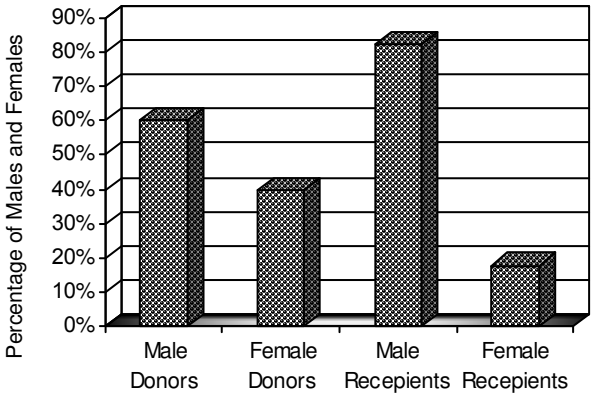

Figure 1: Gender Distribution.

Total 05 (2.4%) recipients were CMV IgG negative and 03 (1.4%) recipients were CMV IgM positive. 200 (98%) recipients were IgG positive and 202 (99%) were IgM negative.

All the donors were CMV IgM negative and CMV IgG positive (Figures 2).

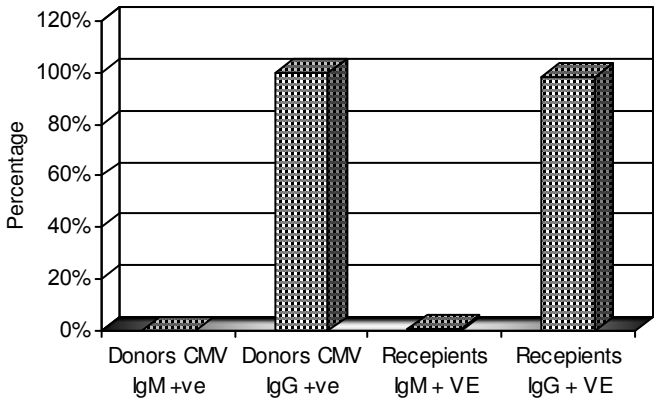

Figure 2: CMS Status.

Discussion

Cytomegalovirus infection in transplant patients is associated with life threatening CMV disease and CMV induced immunosuppression leading to super

infection by various other pathogens with high mortality.[1] In past, cytomegalovirus disease was treated and incidence of cytomegalovirus disease was about 20-60%. Preventive measures either prophylactic therapy or preemptive therapy has markedly decreased the prevalence of cytomegalovirus disease and now its incidence is 5%.

Administration of antiviral agents to all at – risk patients immediately after transplant for a defined duration is called prophylaxis and periodic monitoring of patients for early evidence of CMV viremia, principally using polymerase chain reaction (PCR) is called preemptive therapy.[6]

Frequency of CMV antibodies increases with age in general population as an example a study in Singapore shows that CMV antibodies are present in 40% of 1 – 10 year old population. This increases every decade and reaches 100% at age of 60.[7]

Another study from Hungry shows increase frequency of CMV antibodies with age. The age-specific prevalence increases, starting from 72% in age group of 2 – 20 years to 99% in age group of 50 – 71 years.[8]

Frequency of CMV antibodies is also related to socioeconomic status of peoples .The differences are likely related to the social habits of each race, and sex.[9]

Frequency of cytomegalovirus antibodies in Norwegian kidney – transplant recipients and their living donors is 76% and in Iranian population, It was positive in 100 percent of recipients (n = 69) and 98.73 percent of donors (n = 78).[10]

CMV IgG antibody was positive in 100 percent of recipients and 98.73 percent of donors; CMV IgM antibody was negative in 98.55 percent of recipients and 100 percent of donors among Renal Transplant Recipients and Donors in Khuzestan Province, Iran.[11] It is almost similar to our population.

In our study 98% recipients were CMV IgG positive only 02% were CMV IgG negative but all donors were CMV IgG positive. There is very high probability of getting CMV infection or disease after transplant especially in those recipients who are CMV IgG negative.

Conclusion

The results of our study show that there is very high frequency of CMV in our pre transplant donors and recipients. We should consider preventive therapy either prophylactic or preemptive therapy for our transplant recipients especially when cytomegalovirus antibodies are present in donor and absent in kidney transplant recipients.

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