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Factors Associated with Cytomegalovirus Infection: A Prospective Single Centre Study

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Abstract : The human cytomegalovirus (CMV) is a notorious pathogen in the pediatric transplant setting. Although studies on factors in complicity with CMV infection abound, the role of age, gender, allogeneic hematopoietic stem cell transplantation (alloHSCT) modality, and underlying disease as regards CMV infection and viral load in children are poorly explored. We examined the significance of various factors related to the risk of CMV infection and viral load in Serbian children and adolescents undergoing alloHSCT. This was a prospective single centre study of thirty two pediatric patients in receipt of alloHSCT for various malignant and non-malignant disorders. Screening for active viral infection was performed by regular weekly monitoring. The Real-Time PCR method was used for CMV DNA detection and quantitation. Statistical analysis was performed using the IBM SPSS Statistics v20 software. Chi-square test was used to evaluate categorical variables. Comparison between scalar and nominal data was done by Wilcoxon-Mann-Whitney test. Pearson correlation was applied for studying the association between patient age and viral load. CMV was detected in 23 (71.9%) patients. Infection occurred significantly more often (p=0.015) in patients with haploidentical donors. The opposite was noted for matched sibling grafts (p=0.006). The viral load was higher in females (p=0.041) and children in the aftermath of alloHSCT with malignant diseases (p=0.019). There was no significant relationship between the viral infection dynamics and overt medical consequences. This is the first study of risk factors for CMV infection in Serbian pediatric alloHSCT patients. Transplanted patients presented with a high incidence of CMV viremia. The HLA compatibility of donated graft is associated with the frequency of CMV positive events. Age, gender, underlying disease, and medically relevant events were not conducive to occurrences of viremia. Notably, substantial viral burdens were evidenced in females and patients with neoplastic diseases. Studies comprising larger populations are clearly needed to scrutinize current results.

Keywords : allogeneic hematopoietic stem cell transplantation, children, cytomegalovirus, risk factors, viral load
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