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Pre-Symptomatic Human Cytomegalovirus Disease Diagnosis in Renal Transplant Recipients by the Virus DNA PCR

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Abstract:

Human cytomegalovirus (HCMV, CMV) is a major infectious complication of renal transplantation. The objective of this survey was to optimize and establish a polymerase chain reaction (PCR) technique for rapid and early detection of CMV disease in renal transplant recipients. In a cross sectional study, a total of eighty-one EDTA-blood samples were collected as simple nonrandomized (sequential) weekly from thirty-seven renal transplant recipients during a 1-6 months period after their transplantation in Kidney Transplant Center of Shaheed Labbafinejad Hospital of Tehran. Peripheral blood leukocytes (PBLs) were isolated and DNA was extracted. HCMV DNA in PBLs was detected by PCR using a conserved set of primers. Amplified fragment was confirmed by restriction fragment length polymorphism (RFLP) and sequencing. Correlation between PCR results and patients' data was analyzed. Twelve patients from thirty-seven renal transplant recipients had positive samples containing HCMV DNA in PBLs (32.4%), whereas, five of them showed symptomatic CMV disease (13.5%) and seven of them did not show symptomatic CMV disease, but had some signs of pre-symptomatic CMV disease. Twenty-five patients had negative PCR results, and all of them did not have symptomatic CMV disease. Considering type one error ($\alpha = 0.05$), a nonparametric Fisher's exact test showed a good correlation between two variables of positive PCR results and symptomatic CMV disease in renal transplant recipients ($P=0.002$). In conclusion, establishing methods for early detection of HCMV DNA, even prior to showing symptomatic CMV disease, has been shown to be an effective way for starting antiviral therapy, prior to patients' experience of symptomatic CMV disease.

Keywords:

[Human cytomegalovirus \(HCMV\)](#) , [Renal transplant recipient](#)

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