

Project No: 3552/2006

Single multiplex PCR assay for diagnosis of acute viral encephalitis

Principal Worker

Col Satish Kumar

Unit

AFMC

OBJECTIVES

From a practical point of view, a clinician confronted with a patient of fever, headache, and altered mental status must distinguish encephalitis from noninfectious causes of brain dysfunction (encephalopathy), and able to identify a specific etiologic agent. Acute encephalitis may occur as an epidemic (Japanese Encephalitis (JE) or sporadic of which Herpes simplex virus (HSV) I & II, cytomegalovirus, Varicella Zoster virus, Epstein Barr virus and rabies are most important. During the past decade, in diagnostic laboratories the use of PCR is limited by cost and sometimes the availability of adequate test sample volume. To overcome these shortcomings and also to increase the diagnostic capacity of PCR, a variant termed multiplex PCR has been described. In multiplex PCR more than one target sequence can be amplified by including more than one pair of primers in the reaction. Multiplex PCR has the potential to produce considerable savings of time and effort within the laboratory without compromising test utility. The study was effort to carry out a Single Multiplex PCR for the diagnosis of Acute Viral Encephalitis.

METHODOLOGY

This was a method development study, where a PCR assay for single-tube amplification was performed to find out the sensitivity of this assay and compare it to already published PCRs data. This was also done to evaluate the feasibility of this assay on a limited number of clinical samples. The study was limited to the application of PCR for the commonest causative viruses suspected to cause acute sporadic encephalitis. Hence primarily Herpes group of viruses' i.e HSV, CMV and VZV were targeted in the study population.

RESULTS

The presence of the HSV, VZV, and CMV, genomes was investigated by Unilplex and Multiplex PCR in a total of 54 SCF specimens. Overall, 6 (11.1%) fo the CSF samples tested were positive in the PCR. HSV-1 was detected in the six patients with encephalitis, VZV was not detected in any patient and CMV was detected in one neonate.

RECOMMENDATIONS

Herpes simplex virus (HSV) DNA detection in cerebrospinal fluid (CSF) samples is a rapid, non-invasive method for HSE diagnosis and evaluation of presumed HSE cases. The study is an attempt to highlight the value CSF PCR in cases of suspected encephalitis, with high index of suspicion of encephalitis due to herpes group of viruses on clinical grounds, and planning early antiviral therapy to reduce both mortality and morbidity associated with this fatal disease.