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Human enteroviruses and viral meningitis in southern Brazil

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Teurotropic enteroviruses are important human pathogens of meningitis where approximately 90% of cases are due to echovirus and coxsackievirus. In Curitiba city, Brazil, approximately 50% of meningitis cases with hospitalization are attributed to viruses which are diagnosed mainly based on the differential cell count of cerebrospinal fluid (CSF). The aim of this study was to define the epidemiological profile and the molecular characterization of enterovirus (EV), in CSF samples collected from patients with signs and symptoms of viral meningitis. A total of 440 CSF samples were collected from patients in the period of July 2005 to June 2006. The samples were collected in suitable containers and sent refrigerated to the laboratory within 12 hours. CSF was selected according to the inclusion and exclusion criteria established for the study. The detection of the region 5'NCR of the EV genome was performed using reverse transcription followed by PCR (RT-PCR). In addition, the VP1 gene was amplified for further phylogenetic analysis. Cellular and biochemical characteristics of CSF, as well as, epidemiological characteristics were also analyzed. EV were detected in 49/440 (11%) of the samples by RT-PCR methodology. There was a predominance of positive samples in the age range of 7 to 14 years (41%) and 4 to 6 years (28.6%). A patient three months old presented mixed infection by EBV and EV. A higher circulation of the EV was observed during the summer months. By genomic sequencing the echovirus 30, echovirus 4 were detected and 5 samples were non typed human echovirus. A predominance of negative results (89%) in this study indicates that some factors limited the detection of viral genome in CSF samples. In conclusion the RT-PCR methodology permits the definition of the viral etiology in the central nervous system infections within 4-8 hours direct from CSF samples. It was detected echovirus types 30 and 4 and the majority of the samples presented negative results.