

PI 898: Frequency and clinical relevance of detection of herpesviruses 6 and 7 in cerebrospinal fluid samples

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INTRODUCTION AND PURPOSE

Viruses are the main etiological cause of central nervous system (CNS) infections, in particular enteroviruses (EV), herpes simplex (HSV), varicella-zoster (VZV), cytomegalovirus (CMV) and Epstein-Barr virus (EBV). However, the frequency of CNS disease caused by human herpesvirus 6 (HHV-6) and 7 (HHV-7) is unclear. The aim of this study was to evaluate frequency and clinical relevance of HHV-6 and HHV-7 CNS infection.

METHODS

Cerebrospinal fluid (CSF) samples, from May 2012 to August 2016, were processed to determine the presence of herpesvirus 1 to 8 and EV using a low-density microarray (Clart Entherpex kit, Genomica, Coslada, Spain) after nucleic acids extraction with NucliSENS® easyMag® (Biomerieux). A review of clinical records was conducted when HHV-6 and HHV-7 were detected.



RESULTS

Among 844 samples/ 734 patients analysed, 112 samples (13.3%)/101(13.7%) patients, tested positive. Sixty-eight (60.7%) from male patients. The median age was 48.5 years (20-90). Simple infections were detected in 93 (83.0%), VHS-1: 14 (12.5%), VHS-2: 2 (1.8%), VVZ: 3 (2.7), CMV: 11 (9.8%), VEB: 17 (15.2%), VHH-6: 15 (13.4%), VHH-7: 16 (14.3%) and EV: 15 (13.4%). Viral co-infection was detected in 19 (17.0%) CSF samples, co-infections with two viruses in 14 (12.5%) and with 3 viruses in 5 (2.2%) CSF samples.

HHV-6 and HHV-7 were detected in 42/112 (37.5%) samples. Among mixed infections, VHH-6 was detected in 5/19 (26.3%) and VHH-7 was detected in 9/19 (47.4%) samples. Only 24 patients, with clinical records and without viral CNS co-infections, were included in further analysis. No differences were observed between VHH-6 (n=12) and VHH-7 (n=12) groups with respect to demographic data. Immunocompromised status, speech, hearing or visions problems, confusion and convulsion were more frequently observed in patients with VHH-6 CNS infection, and these patients were more often treated with antivirals.

SIMPLE INFECTIONS N=93									
Virus:	VHS-1	VHS-2	VVZ	CMV	VEB	VHH-6	VHH-7	VHH-8	EV
N (%)	14 (12.5)	2 (1.8)	3 (2.7)	11 (9.8)	17 (15.2)	15 (13.4)	16 (14.3)	0 (0.0)	15 (13.4)
DOUBLE INFECTIONS N=14									
Viruses:	VHH-6 + VHH-7	CMV + VEB	VVZ + VHH-7	VVZ + CMV	VVZ + VEB	CMV + EV	VEB + VHH-6	VEB + VHH-7	VHH-8 + EV
N (%)	3 (2.7)	3 (2.7)	2 (1.8)	1 (0.9)	1 (0.9)	1 (0.9)	1 (0.9)	1 (0.9)	1 (0.9)
TRIPLE INFECTIONS N=5									
Viruses:	VHS-1+VEB+VHH-7	VVZ+CMV+VEB	CMV+VEB+VHH-6	CMV+VHH-7+EV					
N (%)	2 (1.8)	1 (0.9)	1 (0.9)	1 (0.9)					

Table 1. Frequency of viruses in 112 CSF samples

CONCLUSIONS

HHV-6 and HHV-7 were among the most common viruses detected in this study. Its clinical relevance is difficult to assess surely due to the small number of patients included. Despite no significant differences were observed, data showed that VHH-6 CNS infections were more commonly associated with neurologic symptoms and with antiviral treatment.

CHARACTERISTICS	VHH-6 (n=12) n(%)	VHH-7 (n=12) n(%)
Male	8 (66.7)	9 (75.0)
>30 years	6 (50.0)	9 (75.0)
Immunocompromised	7 (58.3)	5 (41.7)
Antiviral treatment	4 (33.3)	1 (8.3)
Headache and fever	5 (41.7)	3 (25.0)
Nausea and vomiting	5 (41.7)	2 (16.7)
Speech, hearing or vision problems	5 (41.7)	3 (25.0)
Paresis or hemisensory loss	2 (16.7)	2 (16.7)
Convulsion	2 (16.7)	0 (0)
Confusion	3 (25.0)	0 (0)
Pathologic CSF	7 (58.3)	9 (75.0)

Table 2. Demographic and clinical characteristics of HHV-6 and HHV-7 CNS infections