



## HSV-1 Meningitis: Accident or New Paradigm?

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### Abstract

We report a case of Herpes Simplex virus type 1 primary infection unexpectedly complicated by aseptic meningitis without encephalitis sign among an 11 old child. The patient recovered without any sequela. HSV-1 meningitis is exceptional but could be more frequently observed linked to the epidemiological changes in HSV infections.

### Introduction

Herpes Simplex Viruses (HSV) is known to invade the Central Neural System (CNS). HSV type 1 usually moves via the trigeminal and/or olfactory ganglia to the CNS, where it replicates, and causing life-threatening encephalitis [1]. HSV type 2 spreads from the sacral ganglia and is responsible for benign, spontaneously resolved but often recurrent, Mollaret's meningitis [2].

This report describes the case of an immunocompetent 11 year-old boy admitted in emergency to the Toulouse University Pediatric Hospital in November 2019 suffering from a fever, pulsatile frontal headache, neck stiffness, phono-phobophobia, nausea and vomiting. The fever, headache and vomiting appeared ten days earlier in a context of a herpes-like gingivostomatitis.

Physical examination confirmed the pyrexia and meningitis with no focal neurological deficit or symptoms of encephalitis. He had no rash or vesicular eruption. The admission cranial computed tomography scan was normal.

Examination of the Cerebrospinal Fluid (CSF) revealed pleocytosis (548 cells/ $\mu$ l, 100% lymphocytes) and increased protein (2.7 N). CSF gram staining was negative as were cultures. Multiplex PCR targeting CNS bacterial, viral and fungal pathogens (n=14) (Film Array<sup>®</sup> Meningitis/Encephalitis panel - BioFire Diagnostics, BioMerieux, France) was positive for HSV-1. This was confirmed with a specific in-house molecular system for detecting HSV-1 and 2 genomes [3]. The serum/blood C-reactive protein and white blood cell count were normal. Tests for HSV-1 and HSV-2 genomes were negative; that for anti-HSV-1 IgG was positive and that for anti-HSV-2 IgG was negative (Liaison<sup>®</sup> XL HSV-1 and HSV-2 Type

Specific IgG - DiaSorin, Italy). At one month a control test for anti-HSV-1 IgG showed a four-fold increase in antibody titer. Cerebral magnetic resonance imaging at diagnosis gave normal patterns.

The patient was given intravenous acyclovir (500 mg/m<sup>2</sup> every 8 h) for 2 weeks. He completely recovered and was discharged without any sequela. The detailed medical history, clinical manifestations and their evolution, anti-HSV-1-IgG kinetic suggest that the gingivostomatitis reflected a pauci-symptomatic HSV-1 primary infection. The virus probably migrated *via* the neurons to the CNS at the same time as the gingivostomatitis but needed 10 days to produce meningitis.

This case is one of exceptionally pure HSV-1 meningitis, with no clinical or radiological signs of encephalitis. HSV-1 has never, to our knowledge, been associated with such a syndrome, unlike enteroviruses [4] and HSV-2 [2], which can both result in viral meningitis. Finally, our findings demonstrate that the molecular detection of HSV-1 in the CSF is relevant in enterovirus-negative aseptic meningitis among children.

### References

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