



Cluster headache due to intranasal herpes simplex: a case report

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Abstract

Cluster headache is characterized by pain in the trigeminal nerve's first division and autonomic features, with attacks lasting from 15 minutes to 180 minutes, up to eight times a day. Although considered a primary headache, it may be mimicked by structural diseases like infections, inflammation, tumor, and vascular. Intranasal and sinus infectious were also reported. Herpes simplex infections are quite common in the general population, and the nerve ganglia are the natural reservoir of the virus. Intranasal herpes, on the other hand, is exceedingly rare, with only a few cases reported in the literature. Our main objective is to describe a case report of a 49-year-old man who was diagnosed with intranasal herpes infection during a bout of cluster headache, evaluated by an otolaryngologist. He got free of symptoms after using valacyclovir and melatonin. Thus, herpes simplex might be involved in the mechanisms of secondary or primary cluster headache. Further research is necessary to help elucidate this relationship.



Introduction

Cluster headache is a rare kind of primary headache, accounting for roughly 0.1% worldwide; it is considered a trigeminal autonomic cephalalgia characterized by pain in the distribution of the first division of the trigeminal nerve along with autonomic features. It has a male predominance and seems to be more common during spring and autumn.¹

Cluster headache attacks are defined by severe pain, orbital, supraorbital, temporal, or a combination of these, unilateral, lasting from 15 minutes until 180, occurring up to eight times a day. Headache attacks usually occur with symptoms such as lacrimation, conjunctival injection, rhinorrhea, forehead, miosis, ptosis, eyelid edema, and agitation.² Life habits such as smoking, and head trauma, are considered risk factors for this illness. Structural diseases may also cause cluster headache; in a recent systematic review, the most common pathologies associated were vascular, tumoral, inflammatory and infection. Features of the history such as late onset and altered neurologic examination must be considered as red flags and one must look for secondary causes for the headache. Intranasal and sinus infectious such as sinusitis and mucocele were also reported.³

Labial and genital herpes are common diseases in the general population, caused by herpes simplex 1 and 2. Among people up to 49 years old, it is estimated that the seroprevalence of herpes simplex virus 1 (HSV-1) is as high as 67% (3.7 billion individuals of the global population). The nerve ganglia are the natural reservoir of this virus, and it may be reactivated by trigger factors such as emotional stress, fever, common cold, trauma, among others.⁴ Intranasal herpes, on the other side, is quite an unusual site of infection, with only a few cases so far reported in the literature.^{5,6}

Our goal is to report a case of cluster headache secondary to intranasal herpes simplex infection.

Case Report

We report a case of a 43-year-old right-handed man, presented 2 years ago with a left-sided excruciating pain, starting in the orbital region irradiating to the ear and nose, lasting 15 minutes, associated with tearing and ipsilateral rhinorrhea. He also complained of sleep deprivation and anxiety; he thus was started on melatonin, subcutaneous sumatriptan, and oxygen. The headache cycle ended soon after melatonin, and he did not try sumatriptan or oxygen.

One year later, he presented another cluster headache cycle with the same features, and he also felt paresthesia in the left lateral nasal region. An otolaryngologist evaluated the patient at the emergency department, and rhinoscopy disclosed lesions in the internal vestibular region of the nose, hyperemia, and scars suggestive of herpes simplex. Antibodies IgM and IgG for herpes simplex were positive. A diagnosis of nasal herpes was made. The patient started on valacyclovir 500 mg *tid*, and headaches had prompted relief three days after starting the antiviral therapy. In a follow-up visit, six months after the treatment, he still was free of headache attacks.

Discussion

Cluster headache has already been reported to be associated with herpes simplex infection in a case of a 42-year-old man, which presented with cluster headache in association with ipsilateral herpes simplex in 1985.⁷ This report suggested that the vasodilation seen in cluster headache could be active by the latent viral infection in the trigeminal system. Our report seems to be the first case linking cluster headache to intranasal herpes simplex infection. IgM and IgG class antibodies confirm a chronic infection with recent reactivation, associating the cluster headache with the HSV reactivation process.

This report supports the role of viral infections as a putative cause of secondary cluster headache. Herpesviruses or other underlying infectious diseases might be related to the mechanisms of triggering cluster headache bouts. It is a biologically plausible theory because:

1. Neuronal tropism of certain infectious agents - Herpes simplex virus type 1 can cause serious neurological disease, such as encephalitis, albeit the precise pathophysiologic mechanisms remains unclear so far; it is believed that the infection of the oropharynx may reach the central nervous system through the trigeminal via or olfactory tracts, and axonal spread might likewise play a role.⁸

2. It is common in the population - Herpes simplex type 1 is one of the most common mucocutaneous infections worldwide, which incidence in 2012 was estimated at 118 million. Transmission of HSV-1 generally occurs with infected or genital secretions during asymptomatic shedding. Viral shedding is characterized as the detection of the herpes simplex virus from orofacial sites. It is thought that viral shedding from nares accounts only for 3% of the cases.⁹ Nonetheless, precisely



intranasal herpes epidemiology remains little known.

3. It may cause pain, and if occurring in the intranasal cavity, it could mimic cluster headache.

4. An Italian study found high titers of antibody anti-herpes simplex 1 and 2 viruses in cluster headache patients.¹⁰

5. HSV can lead to trigeminal ganglion inflammation, a structure known to be involved in the pathophysiology of cluster headache.¹¹

However, there are some arguments against the thought that herpes is a common or a general cause for cluster headache, such as:

1. Seasonal variation and circadian rhythmicity – Cluster headache bouts are seasonal, occurring principally in autumn and spring and during the transitions from winter to spring.¹ However, herpes simplex seasonality is controversial – most authors consider it not seasonal but rather an endemic disease. In addition, a Korean multicenter study showed that only half of the patients with active cluster headache had circadian rhythmicity in the current bout.^{4,12}

2. Epidemiology of cluster headache and herpes simplex infection – While herpes simplex infection is quite common worldwide, cluster headache prevalence is estimated at 0.12%.² Hence, it is unlikely that herpes simplex is one of the main causes of cluster headache bouts.

Conclusion

Herpes simplex might be involved in secondary or primary cluster headache mechanisms, and further research is necessary to help elucidate this relationship. A careful history regarding previous herpes simplex infections should be considered, and an intranasal examination should be included in the suspected cases, as well as laboratory workup for herpes simplex. Methods to diagnose HSV include viral culture, Tzanck smear, serology, and polymerase chain reaction.⁴

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