

Pharyngeal dysphagia due to Varicella zoster virus meningoradiculitis and full recovery: Case report and endoscopic findings

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Abstract

Varicella zoster virus reactivation is a rare cause of pharyngeal dysphagia with long-term sequelae persisting in most cases. A 76-year-old immunocompetent woman presented with a 4-week history of dysphagia and dysphonia. Brain magnetic resonance imaging displayed a negative finding. Fiberoptic endoscopic evaluation of swallowing showed a severe dysphagia leading to a percutaneous gastrostomy eventually. Cerebrospinal fluid analysis revealed a lymphocytic pleocytosis and polymerase chain reaction amplified Varicella zoster virus DNA. Eight months after Acyclovir treatment and despite a persisting impairment of the recurrent laryngeal nerve, regular swallowing function was regained and percutaneous gastrostomy could be removed.

Keywords

Dysphagia, fiberoptic endoscopic evaluation of swallowing, Varicella zoster virus, meningoradiculitis, viral infections, neurology, gastroenterology/hepatology, infectious diseases

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Introduction

Among a variety of neurologic disorders including meningo-radicularitis, meningoencephalitis, cerebellitis, myelopathy, zoster, chronic pain and vasculopathy, reactivation of Varicella zoster virus (VZV) from latently infected ganglia can lead to single or multiple cranial nerve palsies.¹ It is widely reported that VZV infections involve cranial nerves V, VII and VIII, whereas the involvement of cranial nerves IX and X has only rarely been reported.^{2–5} Cranial nerves IX and X play a major role in the act of swallowing as they supply fibers to the pharyngeal plexus which provides sensitive innervation of the pharynx and hypopharynx and motor fibers that innervate most of the pharyngeal muscles and partly the velar muscles. Furthermore, the vagus nerve provides motor and sensitive supply to the larynx. This explains why VZV infections involving cranial nerves IX and X can be a rare condition to cause pharyngeal dysphagia, and only few patients fully recover from this condition. Long-term sequelae persist in the majority of cases.² Here, we demonstrate a case of pharyngeal dysphagia due to VZV meningoradiculitis and full recovery of swallowing function after Acyclovir

treatment using fiberoptic endoscopic evaluation of swallowing (FEES). FEES allows to detect causes, character and severity degree of dysphagia.⁶

Case

A 76-year-old immunocompetent woman presented to our clinic with a 4-week history of dysphagia and mild dysphonia. Besides these symptoms, the neurological examination was normal, especially no cutaneous or mucosal lesions were found. Brain magnetic resonance imaging (MRI) was normal. During the first 2 weeks after presentation to our hospital, we performed FEES twice according to the protocol

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by Langmore⁷ (video 1). The anatomic–physiological assessment revealed massive saliva residues. During phonation, we found a paralysis of the pharynx on the right-hand side and of the right vocal cord explaining the patient’s dysphonia. The vocal cords would not close firmly. Functional testing, first with green pudding, revealed a penetration of the bolus into the larynx and massive residues remained in the pyriform sinus and epiglottic valleculae. During functional testing with blue dyed water, coughing and choking indicated aspiration. Cerebrospinal fluid (CSF)-analysis revealed a lymphocytic pleocytosis (lymphocytes: $54\ \mu\text{L}^{-1}$, granulocytes: $0\ \mu\text{L}^{-1}$, other cells: $17\ \mu\text{L}^{-1}$ and proteins: $580\ \text{mg/L}$). Polymerase chain reaction (PCR) amplified VZV DNA, and we diagnosed a VZV meningoradiculitis. Intravenous Acyclovir treatment was performed for a period of 32 days ($750\ \text{mg}$ three times a day). As a result of the persistence of severe pharyngeal dysphagia that would not allow for an oral diet for more than 6 weeks, a percutaneous gastrostomy (PEG) had to be installed eventually.

A follow-up examination 8 months later (video 2) showed no saliva residues anymore. A paralysis of the right vocal cord could still be detected but vocal cords now closed firmly. Functional testing with green pudding and blue dyed water revealed hardly any residues and even bread, usually being the most difficult consistency to swallow, would leave only few residues at the tongue base and epiglottis. The pharynx contraction on the right-hand side was strongly improved, and even though still being slightly prolonged, the act of swallowing could be described as save and PEG could be removed.

Discussion

Among many other causes, VZV meningoradiculitis can lead to pharyngeal dysphagia. With a decline in VZV-specific cell-mediated immunity particularly in elderly and immunocompromised individuals, VZV can reactivate in latently infected cranial ganglia.⁸ Patients commonly present with affection of cranial nerves V, VII and VIII but cranial nerves IX and X can be involved as well. Usually, more than one cranial nerve is affected, but it has also been shown that isolated dysphagia can occur as a manifestation of VZV infection in cranial nerve IX or X.^{1–5} The diagnosis of VZV infection is commonly made clinically because of the characteristic signs and symptoms of the infection with shingles being the most distinctive manifestation.⁹ In the absence of cutaneous or mucosal lesions (zoster sine herpette), it is difficult to diagnose a VZV infection and to distinguish the affection of the cranial nerves IX and X from idiopathic laryngeal paralysis.¹⁰

High accuracy and sensitivity as well as quick results in comparison to virus isolation and serologic tests makes PCR the current diagnostic standard to detect VZV infection.⁹ Recently, it was shown that in less than half of patients suffering from VZV infection in the central nervous system (CNS), VZV DNA could be detected in the serum as well.¹¹

Thus, CSF analysis can be the missing link to identify the cause of pharyngeal dysphagia and should therefore be performed if VZV infection of the CNS is considered to be the reason for a newly occurred swallowing disorder. This is particularly important as dysphagia assessment is a multidisciplinary approach with gastroenterologists, ear–nose–throat (ENT) specialists, speech-language pathologists and neurologists being involved. Rare and uncommon manifestations of disease require a collaboration of the different medical specialties involved to allow for an early diagnosis and a timely and appropriate treatment.

Indications for an antiviral treatment of VZV infection are an immunocompromised state, moderate to severe pain, severe rash, involvement of the face or eye, age ≥ 50 years and/or complications of zoster,¹² such as dysphagia. Antiviral treatment has shown to lead to a cessation of viral shedding and reduces the time to the last new lesion formation.¹² Following this pathophysiological line of argument, an early antiviral treatment of VZV-related dysphagia might lead to an earlier recovery of swallowing function which should be sought with regard to the vital role of swallowing and to avoid potential secondary complications such as aspiration pneumonia or malnutrition.

To our knowledge, this is the first detailed video-documented characterization of isolated acute dysphagia following VZV reactivation and only the second report on this disease manifestation at all³ with the patient presented here suffering from a more severe dysphagia and prolonged symptoms after antiviral treatment. In the case reported by Mantero et al., also CSF analysis allowed to diagnose VZV reactivation and swallowing function improved within weeks after antiviral treatment. Considering these two cases, CSF examination can be the missing link to the cause of pharyngeal dysphagia and enable the physician to start a treatment that may lead to full recovery of the swallowing function eventually.

Conclusion

VZV meningoradiculitis is a rare cause of pharyngeal dysphagia and without typical clinical signs, such as cutaneous or mucosal lesions, difficult to diagnose. As CSF analysis allows for an early antiviral treatment which is likely linked with a better recovery of swallowing function, it should be performed in cases of newly occurred pharyngeal dysphagia.

Declaration of conflicting interests

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Ethical approval

Our institution does not require ethical approval for reporting individual cases or case series.


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Informed consent

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