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Case Report

A Rare Case of Isolated Dysphagia After Influenza Vaccination

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Abstract

The influenza vaccination is associated with several neurological complications, namely cranial nerve neuropathies. There are only two clinical cases described in the literature of isolated glossopharyngeal and vagus nerve palsies after influenza vaccination. We report a case of glossopharyngeal and vagus nerve palsies four days after receiving an inoculation of the inactivated influenza vaccine, in an adult without a previous neurological history. Intravenous immunoglobulin (IVIg) treatment was applied and the symptoms quickly disappeared. The atypical manifestations of Guillain-Barré syndrome (GBS) can present with mild neurological deficits that are easily overlooked. In these cases, a careful assessment should be made, taking into account the risk of disease progression, the need for clinical surveillance and immediate immunological treatment, which improves the prognosis of the disease.

Keywords: Dysphagia; Influenza Vaccination; Glossopharyngeal Nerve Palsy; Vagus Nerve Palsy; Nerve Palsy

Abbreviations

CN: Cranial Nerve; GBS: Guillain-Barré Syndrome; IDDSI: International Dysphagia Diet Standardisation Initiative; IVIg: Intravenous Immunoglobulin; MRI: Magnetic Resonance Imaging; NA: Not Applicable

Introduction

A few serious neurological adverse events induced by influenza vaccination have been reported in the last years. GBS and acute disseminated encephalomyelitis are thought to be major neurologic complications after vaccination [1].

Cranial neuropathy develops as postvaccination GBS and a number of GBS subtypes are described by isolated cranial nerve palsies without typical extremity paresis [2]. Isolated cranial nerve involvement without classical features of GBS is considered a rare type of this disease and accounts for 3-5% of cases. Facial nerve is the most affected cranial nerve (CN), followed by bulbar dysfunction (IX and X CN) [3]. There are only two clinical cases described in the literature of isolated glossopharyngeal and vagus nerve palsies after influenza vaccination (Table 1).

Case Report

A 38-year-old man developed progressive acute dysphagia with fluid intake. There was no previous illness, travel or trauma, but the patient received influenza vaccination four days before the onset of symptoms. Personal history of smoking (15 pack-years). There was no relevant family history and no alcohol or drugs abuse. The patient didn't have fever, rashes, arthralgias, diarrhea, decreased muscle strength, dyspnea, sensory abnormalities, autonomic or genitourinary tract symptoms.

Examination showed normal vital signs. Pulmonary auscultation was normal and there was no lymph node swelling. The neurological examination was normal, except abnormalities of IX and X CN. The uvula elevation was preserved and symmetrical. Laryngeal elevation, lips mobility and coordination were preserved and there were no tongue deviations. The patient had a decreased sensation

in the posterior soft palate and the gag reflex was abolished. Besides that, he had fractional swallowing and cough with fluid intake (International Dysphagia Diet Standardisation Initiative- IDDSI 0).

Routine blood tests were all normal. There was no significant inflammatory reaction and virological and immunological tests were negative. Lumbar puncture was performed nine days after symptom onset. Cerebrospinal fluid had protein concentration of 44.8 mg/dL, zero cells per microliter and a glucose concentration of 66 mg/dL. Brain MRI, upper gastrointestinal endoscopy and laryngeal fiberscope were normal. Two weeks post-admission, a video fluoroscopic swallowing study, was performed and showed changes in oral and pharyngeal phase efficacy and oral phase safety (Figure 1 and 2). On oral phase, the patient presented deficit in the retropulse of the tongue base and fractional swallowing with 20 mL of thin liquid (Penetration Aspiration Scale 3). On pharyngeal phase presented delayed swallowing reflex, muscle weakness in pharyngeal constrictor muscles and broad-based penetration, without aspiration risk, for 20 mL of thin liquid. EMG, performed four weeks after symptom onset, was normal.

A five days course of IVIg (0.4 g/kg/day) was given. The patient ate a soft diet without double consistency (IDDSI 6) and mildly thickened liquid (IDDSI 2). He participated in dysphagia therapy, including swallowing exercises, therapeutic per os trials, exercises for cleaning pharyngeal residues, exercises to strengthen pharyngeal muscle, improve the retropulsion of the base of the tongue and stimulate the sensitivity of the posterior oral cavity. The treatment resulted in a prompt recovery and, on the 20th day after vaccination, the patient started diet without adaptations and restrictions.

Figure 1: Videofluoroscopic swallowing study showing delayed swallowing reflex.

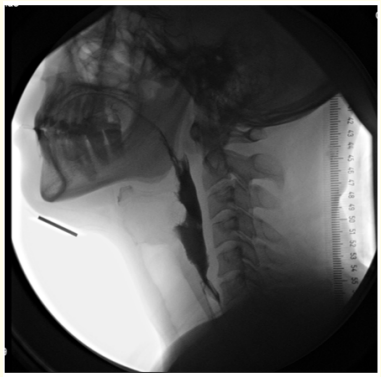

Figure 2: Videofluoroscopic swallowing study showing penetration with 20 mL of thin liquid.

Discussion

The pathogenesis of postvaccination cranial neuropathy is not clearly understood. Vaccine antigens are thought to induce an immunological cross-reaction with anti-ganglioside antibodies, destroying myelin proteins and leading to nerve demyelination [2].

This syndrome is usually acute and self-limited. Cerebrospinal fluid protein concentration is frequently elevated with a normal cell count. Systemic manifestations and permanent neurological deficits are rare. Treatment includes steroids and IVIg treatment, both are effective. In most cases, the disease has a good outcome and the risk of recurrence is low [2].

Our patient presented a neuropathy involving only the glossopharyngeal and vagus nerves. We believed that this patient had cranial neuropathy as an atypical presentation of GBS after vaccination for the following reasons: time sequence, since the first symptoms appeared four days after vaccination, in a patient without previous infection or other trigger; albuminocytological dissociation in cerebrospinal fluid; dysphagia was the only clinical manifestation, which is in line with the facts presented in other clinical cases (Table 1), where dysphagia was the most common symptom in neuropathy of the IX and X CN [3]; the clinical course is similar to classic GBS and the symptom resolution with IVIg treatment strongly suggests an immunological reaction in the pathogenesis of the disease.

Source	Ishii., *et al.* (2014) [2]	Munsat and Barnes (1965) [4]
Age/gender	15 years old, male	40 years old, female
Time from vaccination to symptoms	7 days	10 days
Clinical manifestations	Dysphagia, nasal regurgitation, nasal voice, dysarthria	Hands paresthesias, dysphagia, nasal regurgitation, dysarthria, diplopia, unilateral nystagmus on the right eye
Blood tests	Normal	Normal
Cerebrospinal fluid	Normal	Normal
Radiology	Brain MRI normal	Skull radiographs normal
Nerve conduction studies	Normal	NA
Nasofibrolaryngoscopy	Normal	NA
Treatment	IVIg (0.4 g/Kg/day)	NA
Clinical course	Fast improvement with complete resolution at 67th day after vaccination	Fast and progressive resolution of neurological deficits without treatment

Table 1: Clinical cases of dysphagia as a clinical manifestation of glossopharyngeal and vagus nerve palsy after influenza vaccination, described in the literature.

Conclusion

We conclude that influenza vaccination is a possible aetiology of glossopharyngeal and vagus nerve palsies. This syndrome can present with mild neurological deficits that are easily overlooked. A careful assessment is crucial to quickly identify this rare regional GBS cranial type. When such symptoms appear, immunological treatment should be administered immediately, associated with speech therapy [2].

Conflict of Interest

The corresponding author states that there is no conflict of interest and funding support.

Submission Declaration

The authors declare that this manuscript is entirely original and has not been submitted to any journal or published elsewhere.

Reference

1. Nakamura N., *et al.* "Neurologic Complications Associated with Influenza Vaccination: Two Adult Cases." *Internal Medicine* 42.2 (2003): 191-194.

2. Ishii K., *et al.* "Glossopharyngeal Nerve and Vagus Nerve Palsies Associated with Influenza Vaccination". *Internal Medicine* 53.3 (2014): 259-261.

3. Wang Q., *et al.* "Multiple Cranial Neuropathy Variant of Guillain-Barré Syndrome: A Case Series". *Muscle and Nerve* 44.2 (2011): 252-257.

4. Munsat TL and Barnes JE. "Relation of Multiple Cranial Nerve Dysfunction to the Guillain-Barre Syndrome". *Journal of Neurology, Neurosurgery and Psychiatry* 28.2 (1965): 115-120.