Loss of Taste as an Initial Symptom of a “Facial Diplegia and Paresthesia” Variant of Guillain-Barré Syndrome

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Abstract:
Loss of taste is a relatively common symptom of coronavirus disease 2019 (COVID-19) and has also been considered a rare Guillain-Barré syndrome (GBS) symptom. We herein report a case of a facial diplegia and paresthesia (FDP) variant of GBS that initially presented as a loss of taste occurring two weeks after COVID-19 mRNA vaccination. The patient recovered completely after intravenous immunoglobulin therapy. Clinicians should consider the possibility of post-vaccination FDP manifesting as facial palsy and should be aware that GBS, including the FDP variant, can initially present as an isolated loss of taste.

Key words: loss of taste, gustatory disorders, facial diplegia and paresthesia, Guillain-Barré syndrome, coronavirus disease 2019, vaccination

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Introduction
The rapid spread of coronavirus disease 2019 (COVID-19), which was first reported in December 2019, has led to significant changes in healthcare systems and protocols worldwide. Although the predominant clinical presentation of COVID-19 is respiratory disease, gustatory dysfunction is also a common symptom (1). In addition, neurological manifestations, including Guillain-Barré syndrome (GBS), are potential complications of COVID-19 illness (2).

GBS can also be associated with COVID-19 vaccination (3). Loss of taste is a relatively common symptom of COVID-19 and has also been considered a rare GBS symptom (4, 5). However, the results of a study that investigated gustatory impairment in patients with GBS using electrogustometry suggested that taste impairment in GBS may be more frequent than previously thought (6).

We herein report a case of a facial diplegia and paresthesia (FDP) variant of GBS that initially presented as a loss of taste occurring two weeks after Pfizer COVID-19 mRNA vaccination.
eral type facial weakness (House-Brackmann grade 4, bilaterally). However, his muscle strength and deep tendon reflexes were normal. He had no ataxia, and his gait was normal. Pinprick sensation and joint position sensation were normal.

Blood testing showed that his peripheral white blood cell count was 8,600/µL with 58.5% lymphocytes. His aspartate aminotransferase level was 51 IU/L, whereas his alanine aminotransferase level was 191 IU/L. A serological investigation revealed that the patient was positive for Epstein-Barr virus (EBV) viral capsid antigen (VCA) IgG, positive for EBV early antigen, and showed an equivocal EBV nuclear antigen result. Results of serological tests for hepatitis A, B, and E viruses, herpes simplex virus, varicella-zoster virus, cytomegalovirus, mycoplasma, and human immunodeficiency virus were all negative for recent or active infection. Serum IgG and IgM antibodies against glycolipids GM1, GM2, GM3, GD1a, GD1b, GD3, GT1b, GQ1b, and GalNAc-GD1a were negative. A cerebrospinal fluid analysis showed that the patient had 1 white blood cell/mm³ and a protein level of 76 mg/dL. COVID-19 polymerase chain reaction, which was performed using a nasopharyngeal swab, was negative. A stool culture was negative for Campylobacter jejuni.

Electrodiagnostic studies in his right extremities showed decreased compound muscle action potentials in the median nerve (2.4 mV) and decreased sensory nerve action potentials in the ulnar nerve (5 µV). The distal latencies, conduction velocities, and F-wave latencies were all within normal ranges. His clinical history, physical examination results, and laboratory findings were consistent with a diagnosis of FDP.

The patient underwent intravenous immunoglobulin therapy (0.4 g/kg for 5 consecutive days), starting on the day of admission. His taste sensation improved from day 15, facial palsy from day 17, and paresthesia from day 20. His loss of taste initially presented as gustatory symptoms. Gustatory dysfunction has been reported in 88.8% of COVID-19 cases and is a common initial symptom (1). Therefore, given the COVID-19 pandemic, it may be difficult to diagnose variants of GBS, particularly FDP, in the early stages. Like in the present case, early-stage FDP may be misdiagnosed as Bell’s palsy. In fact, COVID-19 vaccination can cause Bell’s palsy (12), but the treatment of Bell’s palsy generally differs from that of GBS. Although the immune-treatment response and indication for FDP after COVID-19 vaccination remain unclear, the patient in this study showed satisfactory recovery after intravenous immunoglobulin treatment.

In conclusion, this case suggests that the Pfizer COVID-19 vaccine may trigger FDP. Most cases of GBS are easy to diagnose; however, it is often difficult to diagnose variants of GBS, particularly FDP, in the early stages. Like in the present case, early-stage FDP may be misdiagnosed as Bell’s palsy. In fact, COVID-19 vaccination can cause Bell’s palsy (12), but the treatment of Bell’s palsy generally differs from that of GBS. Although the immune-treatment response and indication for FDP after COVID-19 vaccination remain unclear, the patient in this study showed satisfactory recovery after intravenous immunoglobulin treatment.

One limitation of this case report is that the serological results indicated a recent EBV infection, which previous reports indicated as a potential preceding sign of GBS, questioning whether this case’s FDP was triggered by EBV or vaccination. Notably, the patient did not have a fever, sore throat, swollen tonsils, or lymphadenopathy. In contrast, the results of a Japanese study on FDP indicated that the serological EBV positivity rate for patients with FDP was not significantly higher than that of patients with Bell’s palsy or healthy controls, suggesting that EBV is not a significant preceding sign of FDP (16).

In conclusion, this case suggests that the Pfizer COVID-19 vaccine may cause FDP and indicates that the FDP variant of GBS can initially present as a loss of taste. Clinicians must consider the possibility that post-vaccination facial palsy may be FDP. Furthermore, physicians should be aware that GBS, including the FDP variant, can initially present as...
an isolated loss of taste.

The authors state that they have no Conflict of Interest (COI).

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References
1. Lechien JR, Chiesa-Estomba CM, De Siati DR, et al. Olfactory and gustatory dysfunctions as a clinical presentation of mild-to-moderate forms of the coronavirus disease (COVID-19): a multi-center European study. Eur Arch Otorhinolaryngol 277: 2251-2261, 2020.
2. Elhil MA, Benjamin L, Singh B, et al. Neurological associations of COVID-19. Lancet Neurol 19: 767-783, 2020.
3. Shao SC, Wang CH, Chang KC, Hung MJ, Chen HY, Liao SC. Guillain-Barré syndrome associated with COVID-19 vaccination. Emerg Infect Dis 27: 3175-3178, 2021.
4. Soria ED, Candaras MM, Truax BT. Impairment of taste in the Guillain-Barré syndrome. Clin Neurol Neurosurg 92: 75-79, 1990.
5. Odaka M, Yuki N, Nishimoto Y, Hirata K. Guillain-Barré syndrome presenting with loss of taste. Neurology 58: 1437-1438, 2002.
6. Nishijima H, Tomiyama M, Suzuki C, et al. Taste impairment in Guillain-Barré syndrome: more frequent than thought? J Peripher Nerv Syst 16: 270-271, 2011.
7. Bonifacio GB, Patel D, Cook S, et al. Bilateral facial weakness with parasthesia variant of Guillain-Barré syndrome following Vaxzevria COVID-19 vaccine. J Neurol Neurosurg Psychiatry 93: 341-342, 2022.
8. Wakerley BR, Kokubun N, Funakoshi K, Nagashima T, Hirata K, Yuki N. Clinical classification of 103 Japanese patients with Guillain-Barré syndrome. J Neurol Sci 369: 43-47, 2016.
9. Hasan I, Saif-Ur-Rahman KM, Hayat S, et al. Guillain-Barré syndrome associated with SARS-CoV-2 infection: a systematic review and individual participant data meta-analysis. J Peripher Nerv Syst 25: 335-343, 2020.
10. Allen CM, Ramsamy S, Tarr AW, et al. Guillain-Barré syndrome variant occurring after SARS-CoV-2 vaccination. Ann Neurol 90: 315-318, 2021.
11. Pegat A, Vogrig A, Khouri C, Masmoudi K, Vial T, Bernard E. Adenovirus COVID-19 vaccines and Guillain-Barré syndrome with facial paralysis. Ann Neurol 91: 162-163, 2022.
12. Wan EYF, Chui CSL, Lai FFT, et al. Bell’s palsy following vaccination with mRNA (BNT162b2) and inactivated (CoronaVac) SARS-CoV-2 vaccines: a case series and nested case-control study. Lancet Infect Dis 22: 64-72, 2022.
13. Combarros O, Pascual J, de Pablos C, Ortega F, Berciano J. Taste loss as an initial symptom of Guillain-Barré syndrome. Neurology 47: 1604-1605, 1996.
14. Kogan A, Mednick T, Dolgovina M. Loss of taste as the only cranial nerve finding in Guillain-Barre syndrome. J Clin Neuromuscul Dis 13: 56, 2011.
15. Lechien JR, Diaollo AO, Dachy B, et al. COVID-19: post-vaccine smell and taste disorders: report of 6 cases. Ear Nose Throat J. Forthcoming.
16. Susuki K, Koga M, Hirata K, Isogai E, Yuki N. A Guillain-Barré syndrome variant with prominent facial diplegia. J Neurol 256: 1899-1905, 2009.

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