Case Report
J Immunol Clin Microbiol. 2021;6(3):162-165

J Immunol Clin Microbiol

Peripheral Facial Paralysis After COVID-19 Vaccination

Arzu Dinç Yavas[1*]

1 İstanbul Aydın University School of Medicine, Department of Physical Medicine and Rehabilitation, Istanbul, Turkey.

Abstract

Acute peripheral facial paralysis (PFP) is an acute facial weakness of various etiologies. Idiopathic Bell's palsy is the most common cause. Viruses such as herpes zoster and human immunodeficiency virus, autoimmune diseases, Lyme disease, Kawasaki disease, Guillain-Barre and Melkersson-Rosenthal syndrome, ear trauma, temporal bone fractures, barotrauma, otitis media, cholesteatoma, sarcoidosis, are other ethiological causes. Also inactivated or live attenuated vaccines like influenza vaccine can be associated with several neurological complications, such as Guillain–Barre syndrome and chronic inflammatory demyelinating polyneuropathy and PFP. The coronavirus (COVID-19) pandemic has been a threat to millions of people all over the world and the development of effective and safe vaccines against this virus has been the first aim of researchers. Coronavac which is an inactivated COVID-19 vaccine form is used to immunize patients in some of the countries.

Case Report: A 72-year-old female with hypertension developed right-sided facial muscle weakness the days after the second injection of the Coronavac vaccine. She had no history of COVID-19 infection and PCR testing was negative. She had not mentioned cold exposure. Examinations showed right PFP House Brackman stage 5 with partial eyelid closure but no other muscle activation. Her cranial computerized tomography was normal, she was advised to use oral treatment of glucocorticoid, artificial tear drops, and get rehabilitation for paralysis. Electromyographic (EMG) findings at the end of the first month indicated partial axonal damage of the right facial nerve.

Conclusions: This case is an anecdotal incident and no cause and effect can be concluded at this time. But Coronavac may be the cause of peripheral facial palsy in our patient.

Key words: *COVID-19, vaccine, facial paralysis, nerve.*

***Corresponding Author:** Arzu Dinc Yavas. İstanbul Aydın University School of Medicine, Department of Physical Medicine and Rehabilitation, Istanbul, Turkey **Phone:**+905327388853, **E-mail:**arzudinc0111@gmail.com, **Received:**April, 2021. **Accepted:** Jun, 2021.

Introduction

Acute peripheral facial paralysis (PFP)is an acute facial weakness of various etiologies (1). Idiopathic Bell's palsy is the most common cause. Viruses such as herpes zoster and human immunodeficiency virus, autoimmune diseases, Lyme disease, Kawasaki disease, Guillain-Barre and Melkersson-Rosenthal syndrome, ear trauma, temporal bone fractures, barotrauma, otitis media, cholesteatoma, sarcoidosis, are other ethiological causes (2). Also inactivated or live attenuated vaccines like influenza vaccine can be associated with several neurological complications, such as Guillain–Barre syndrome and chronic inflammatory demyelinating polyneuropathy and PFP (3-7). The coronavirus (COVID-19) pandemic has been a threat to millions of people all over the world and the development of effective and safe vaccines against this virus has been the first aim of researchers. Coronavacwhich is an inactivated COVID-19 vaccine form is used to immunize patients in some of the countries. There are reports about PFP after the (Pfizer-BioNTech) and mRNA-1273 (Moderna) vaccines but there is not any PFP reported after Coronavac in the literature (8,9). Herein, we report a patient who developed PFP the the day after the seconddose of Coronavacvaccine.

Case Report

A 72-year-old female with hypertension developed right-sided facial muscle weakness the days after the second injection of the Coronavac vaccine. She had no history of COVID-19 infection and PCR testing was negative. She had not mentioned cold exposure. Examinations showed right PFP House Brackman stage 5 with partial eyelid closure but no other muscle activation (10). Her cranial computerized tomography was normal, she was advised to use oral treatment of glucocorticoid, artificial tear drops, and get rehabilitation for paralysis. Electromyographic (EMG) findings at the end of the first month indicated partial axonal damage of the right facial nerve.

Discussion

In COVID-19 patients neurological complications such as PFP have been reported and mechanisms are tought to be ; ischemia of vasa nervorum and inflammation resulting as nerve demyelination (11). Microvascular changes and microthrombi may lead to facial nerve ischemia (12). Direct viral damage causing inflammation or an autoimmune reaction can be contributing mechanisms to paralysis. Vaccines derived from purified inactivated viruses are safe and effective for the prevention of diseases caused by viruses like influenza virus and poliovirus (13,14). There are reports of neurological complicationsafter influenza vaccination; possible mechanism of PFP after vaccination can be stimulation of an immunomodulatory reaction to adjuvants (15). The most common adverse events reported after Coronavac injection are fever, fatigue, injection site pain (16). Inactivated virus can activate local host immune response and flu-like symptoms can be seen (17). Data on adverse effects reported in COVID-19 inactive vaccines phase 3 trials among 13,060 patients in Brazil, 13000 patients in Turkey, 1620 patients in Indonesia show no neurological adverse effect according to a review (18).

Killed form of pathogens incapable of replication or infection or adjuvants; are the potential responsive components of inactivated vaccines. Adjuvants are the stimulatory agent designed to emphases immune response in certain antigen type. Adjuvants improve

pathogen recognition and elicite a response similar to the natural immune response (19, 20). The mechanism of neurological complications after COVID-19 inactive vaccination is uncertain. Stimulation of an immunomodulatory reaction to adjuvants or localhost response may be the mechanisms working in this vaccine complication

Conclusion

To the best of our knowledge, this is the first report describing peripheral facialnerve palsy following administration of the Coronavac vaccine. This case is an anecdotal incident and no cause and effect can be concluded at this time. But Coronavac may be the cause of peripheral facial palsy in our patient.

Ethics Committee Approval: NA
Informed Consent: NA
Peer-review: Externally peer-reviewed.
Conflict of Interest: No conflict of interest was declared by the author.
Financial Disclosure: The author declared that this study has received no financial support.

References

1. Jowett N. A general approach to facial palsy. Otolaryngol Clin North Am 2018;51:1019–1031.
2. Mattox DE. Clinical disorders of the facial nerve. In: Flint PW, Haughey BH, Lund VJ, Niparko JK, Richardson MA, Robbins KT, et al. Cummings Otolaryngology: Head&NeckSurgery. 6th ed. Philadelphia, PA: Elsevier Science Health Science 2014;2617-28.
3. Rath B, Gidudu JF, Anyoti H, et al. Facial nerve palsy including Bell's palsy: case definitions and guidelines for collection, analysis and presentation of immunisation safety data. Vaccine 2017;35:1972-83.
4. Haber P, De Stefano F, Angulo FJ, Iskander J, Shadomy SV, WeintraubE, Chen RT. Guillain–Barré syndrome following influenza vaccination. JAMA. 2004;292(20):2478–81.
5. Kelkar P. Chronic inflammatory demyelinating polyneuropathy (CIDP) with rapid progression after influenza vaccination: a report of three cases. J Clin Neuromuscul Dis. 2006;8:20–5.
6. Alcalde-Cabero E, Almazán-Isla J, GarcíaLópez FJ, et al. Guillain-Barré syndrome following the 2009 pandemic monovalent and seasonal trivalent influenza vaccination campaigns in Spain from 2009 to 2011: outcomes from active surveillance by a neurologist network, and records from a country-wide hospital discharge database. BMC Neurol. 2016;16:75.
7. Chang KH, Lyu RK, Lin WT, Huang YT, Lin HS, Chang SH. Gulllain–Barre syndrome after trivalent influenza vaccination in adults. Front Neurol. 2019;10:768.
8. Nicola Cirillo Reported orofacial adverse effects of COVID-19vaccines: The knowns and the unknowns J Oral Pathol Med. 2021;00:1–4.
9. Asaf S, Eran P, Idan H Peripheral facial nerve palsy following BNT162B2(COVID-19) vaccination IMAJ 2021;23:143-144.
10. House JW, Brackmann DE. Facial nerve grading system. Otolaryngol Head Neck Surg 1985;93:146–147.
11. Zhang W, Xu L, Luo T, Wu F, Zhao B, Li X. The etiology of Bell's palsy: a review. J Neurol 2020;267:1896–1905.
12. Nunes Duarte-Neto A, de Almeida Monteiro RA, da Silva LFF et al. Pulmonary and systemic involvement of COVID-19 assessed by ultrasound-guided minimally invasive autopsy. Histopathology. 2020;77:186–197.
13. Murdin AD, Barreto L, Plotkin S, Inactivated polio virus vaccine: Past and present experience. Vaccine 1996;14;735–746.
14. Vellozzi C, Burwen DR, Dobardzic A, Ball R, Walton K, Haber P. Safety of trivalent inactivated influenza vaccines in adults:Background for pandemic influenza vaccine safety monitoring. Vaccine 2009;27:2114–2120.
15. Agmon-Levin N, Kivity S, Shoenfeld Y. Influenza vaccine and autoimmunity IMAJ 2009;11(3):183-5.

16. Zhang Y, Zeng G, Pan H, et al. Safety, tolerability, and immunogenicity of an inactivated SARS-CoV-2 vaccine in healthy adults aged 18-59 years: a randomised, double-blind, placebocontrolled, phase 1/2 clinical trial. Lancet Infect Dis. 2020;21(2):181-192
17. Avcı H, Karabulut B, Eken HD, Faraşoğlu A, Çakil T, Çoruk S, Özel H, Kaya NK, Özbalta SÖ. Otolaryngology-Specific Symptoms May Be Highly Observed in Patients With a History of Covid-19 Infection After Inactivated Coronavirus Vaccination. Ear Nose Throat J. 2021;8:14.
18. Lu L, Xiong W, Mu J, et al. The potential neurological effect of the COVID-19 vaccines: A review. Acta Neurol Scand. 2021;144(1):3-12.
19. Shin MD, Shukla S, Chung YH, et al. COVID-19 vaccine development and a potential nanomaterial path forward. Nat Nanotechnol. 2020;15(8):646-655.
20. Pasquale A, Preiss S, Silva F, Garçon N. Vaccine Adjuvants: from 1920 to 2015 and Beyond. Vaccines. 2015;3(2):320-343.

QMEL
Medicine & Publishing

Published by The QMEL®.org
Medicine & Education & Librar