

# Another Case of Bell's Palsy Recurrence After Pfizer-BioNTech COVID-19 Vaccination

Huailin Zhang<sup>1</sup>, Diana Sanchez Gomez<sup>2</sup>, Michael Repajic<sup>3</sup>, Antonio K. Liu<sup>4,5</sup>

Review began 06/29/2022

Review ended 07/18/2022

Published 07/28/2022

© Copyright 2022

Zhang et al. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

1. Internal Medicine, Adventist Health White Memorial, Los Angeles, USA 2. Family Medicine, Adventist Health White Memorial, Los Angeles, USA 3. Neurology, University of Southern California Keck School of Medicine, Los Angeles, USA 4. Neurology, Adventist Health White Memorial, Los Angeles, USA 5. Neurology, Loma Linda University School of Medicine, Loma Linda, USA

**Corresponding author:** Antonio K. Liu, liuak@ah.org

## Abstract

Twenty-seven months into the current pandemic and 18 months after vaccinations were made available, there are still relatively limited data on the incidence of recurrent Bell's Palsy after the administration of mRNA-based vaccines. The authors continue to believe that it is through rigorous reporting that the true incidence can be tabulated eventually.

**Categories:** Neurology, Allergy/Immunology, Infectious Disease

**Keywords:** safety, recurrence, bell's palsy, covid vaccination, pandemic

## Introduction

In both the Moderna and Pfizer-BioNTech coronavirus disease 2019 (COVID-19) vaccine clinical trials conducted at 99 centers across the United States, Bell's Palsy was listed as a possible side effect [1]. After reporting a case of Bell's Palsy recurrence in a patient who received the Pfizer-BioNTech COVID-19 vaccine [2], we encountered another patient with recurrence of Bell's Palsy six days after the administration of the first dose of the Pfizer-BioNTech COVID-19 vaccine. This report intends to add to the growing literature regarding the safety profile of this new vaccine.

## Case Presentation

The patient is a 38-year-old female who connected with us upon reading our previous report. She had been previously healthy except for a prior episode of left-sided Bell's Palsy around 10 years earlier. The symptoms from her first episode were described as severe with eventual full recovery after receiving a combination of a brief course of prednisone, antiviral medication, and acupuncture. The patient received her first dose of the Pfizer-BioNTech COVID-19 vaccine on April 29th of 2021 and began to experience tongue numbness six days later. The following day, she developed a right facial droop (Figures 1-2). The rest of her neurological examination was negative and her workup was unremarkable. Her symptoms progressed over the next few days, which prompted treatment with a week-long course of prednisone. Serial follow-up exams revealed a slower improvement in her symptomatology in comparison to her episode 10 years ago.



**FIGURE 1: Patient with right facial droop.**

### How to cite this article

Zhang H, Sanchez Gomez D, Repajic M, et al. (July 28, 2022) Another Case of Bell's Palsy Recurrence After Pfizer-BioNTech COVID-19 Vaccination. Cureus 14(7): e27422. DOI 10.7759/cureus.27422



**FIGURE 2: Patient unable to close her right eye.**

## Discussion

This report marks another episode of Bell's Palsy recurrence following administration of the mRNA COVID-19 vaccination that the same practice has encountered this year, suggesting a potential association between the mRNA vaccine and these recurrences. COVID infection as well as mRNA-based vaccines have been associated with many neurological conditions, including Bell's Palsy [3]. Data on recurrent Bell's Palsy are lacking; our previously reported Bell's Palsy recurrence after mRNA-based vaccine remains the only peer-reviewed case report in the literature [2]. Some have suggested that type I interferons, which are strongly elicited by mRNA vaccinations, may play a contributory role. Several case reports have hypothesized that a similar phenomenon may be contributing to the development of Bell's Palsy after hepatitis C virus treatment as well as administration of another mRNA vaccine [4-6]. Additionally, at the molecular level, activation of the p53 upregulated modulator apoptosis (PUMA) and innate immunity signaling module (SARM1) can lead to axonal degeneration [7]. Another study suggested that upregulation of the aquaporin 1 water channel protein can lead to infratemporal facial nerve edema and eventual impingement in the temporal bone canal [8].

## Conclusions

With the wide roll-out of mRNA COVID-19 vaccines, population-level surveillance will be required to establish any concrete association between recurrent Bell's palsy and the vaccines. Possible adverse reactions such as the one described here should be diligently reported to help establish a more reliable vaccine safety profile. With this documentation, we hope to help reassure individuals with doubts about vaccination that such occurrences are still very low.

## Additional Information

### Disclosures

**Human subjects:** Consent was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

## References

1. Baden LR, El Sahly HM, Essink B, et al.: Efficacy and safety of the mRNA-1273 SARS-CoV-2 vaccine. *N Engl J Med*. 2021, 384:403-416. [10.1056/NEJMoa2035389](https://doi.org/10.1056/NEJMoa2035389)
2. Repajic M, Lai XL, Xu P, Liu A: Bell's palsy after second dose of Pfizer COVID-19 vaccination in a patient with history of recurrent Bell's palsy. *Brain Behav Immun Health*. 2021, 13:100217. [10.1016/j.bbih.2021.100217](https://doi.org/10.1016/j.bbih.2021.100217)
3. Colella G, Orlandi M, Cirillo N: Bell's palsy following COVID-19 vaccination. *J Neurol*. 2021, 268:3589-3591. [10.1007/s00415-021-10462-4](https://doi.org/10.1007/s00415-021-10462-4)
4. Alberer M, Gnad-Vogt U, Hong H, et al.: Safety and immunogenicity of a mRNA rabies vaccine in healthy adults: an open-label, non-randomized, prospective, first-in-human phase1 clinical trial. *Lancet*. 2017, 390:1511-1520.

5. Ozonoff A, Nanishi E, Levy O: Bell's palsy and SARS-CoV-2 vaccines. *Lancet Infect Dis.* 2021, 21:450-452. [10.1016/S1473-3099\(21\)00076-1](https://doi.org/10.1016/S1473-3099(21)00076-1)
6. Soeiro T, Salvo F, Pariente A, Grandvuillemin A, Jonville-Béra AP, Micallef J: Type I interferons as the potential mechanism linking mRNA COVID-19 vaccines to Bell's palsy. *Therapie.* 2021, 76:365-367. [10.1016/j.therap.2021.03.005](https://doi.org/10.1016/j.therap.2021.03.005)
7. Zhang W, Xu L, Luo T, et al.: The etiology of Bell's palsy: a review . *J Neurol.* 2020, 267:1896-1905.
8. Fang F, Liu CY, Zhang J, et al.: Involvement of MAPK ERK activation in upregulation of water channel protein Aquaporin 1 in a mouse model of Bell's palsy. *J Mol Neurosci.* 2015, 56:164-176.