



Case Report

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Unilateral Lower Limb Paralysis: A Case Report of An Uncommon Side Effect Of Covid-19 Mrna Vaccine

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Abstract

Background: The outbreak of COVID-19 was declared in China on the 31st of December 2019, and it rapidly became a worldwide pandemic. Vaccines targeting this devastating disease became then a priority. Once vaccines started to be distributed and given to people, side effects arose. These adverse events were hematologic, neurological, musculoskeletal etc.

Case report: *In this article a new side effect of COVID-19 vaccination is reported.*

Conclusion: *Although these side effects may seem dangerous, their burden does not exceed the burden of the COVID-19 and that is why the emergence of these atypical side effects should not hinder the vaccination process.*

KEYWORDS: *COVID-19; mRNA Vaccine; Side effects; Trendelenburg gait.*

Introduction

On the 31st of December 2019, China reported coronavirus disease 2019 (COVID-19) outbreak to the world health organization. This pathogen spreads from person to person through droplets discharged by symptomatic and asymptomatic patients while coughing or sneezing [1]. This disease rapidly became a pandemic and until this moment some countries are still in lockdown in order to control the spread of this pathogen. This pandemic lead to prioritizing the COVID-19 vaccine [2]. A lot of vaccine types were created such as mRNA, vector, DNA, inactivated virus etc. [2]. Although this vaccine was rapidly given to people, it was very well studied and analyzed before doing so. Like every other vaccine, side effects are not uncommon. This disease not yet fully understood neither the long-term side effects of its vaccine, the adverse events although most of them are benign now may be higher and more unique.

A lot of side effects due to COVID-19 vaccines are reported in the literature. Some of these adverse effects include anaphylaxis [3], thrombosis [4], vaccine induced thrombotic thrombocytopenia [5], sensory Guillain-Barré syndrome [6], new onset nephrotic syndrome [7], thrombocytopenia [8], encephalitis [9], etc.

In this article, we report a patient presenting with a unilateral paralysis after taking the second dose of the COVID-19 vaccine. This side effect was not, to our knowledge, reported in the literature.

Case report

This is the case of a 46 years-old woman with a history of breast cancer in total remission after partial mastectomy and immunotherapy. After the first dose of the COVID-19 vaccine mRNA vaccine, the patient was totally asymptomatic. After the 2nd dose of the vaccine, the patient developed a fever of 38°C. A total infectious panel was ordered and came back negative. 10 days after the 2nd dose, the patient presented with deficit of the dorsiflexion and a Trendelenburg gait in the right lower limb. On the physical exam, the patient had a dorsiflexion of 1/5 in the right ankle and hip abduction compared to a 5/5 on the left. All other motor exam was unremarkable. Sensory exam and osteotendinous reflexes were normal.

Guillain-Barre syndrome was suspected. A full central nervous system MRI was done. The brain MRI along with the cervical and thoracic spine MRI were normal. The MRI of the lumbar spine exhibited a Pfeirman IV degeneration of the L5-S1 intervertebral disc with a small disc protrusion but without L5 nerve compression explaining the Trendelenburg gait (Fig. 1). Lumbar puncture was done ruling out Guillain-Barré syndrome as well as infection. The results of the lumbar puncture showed a liquid of clear consistency with a glucose value of 80% of serum glucose, protein level 20 mg/dl, opening pressure 15cmCSF and white blood cell count of 2 cells/ μ L

Electromyography studies showed no anomalies. Symptomatic treatment was initialized consisting of multivitamins and pregabalin. After 1 month, all the symptoms spontaneously resolved with on physical exam, both right hip abduction and right ankle dorsiflexion were of 5/5.



Fig. 1: Lumbar MRI showing patent L5 foramen (T1 weighted images (A): right foramen, (C) left foramen) and Pfirman IV L5S1 disc degeneration ((B) T2 weighted images midline

Discussion

Transitional Trendelenburg gait with unilateral dorsiflexion deficit after the 2nd dose of the COVID-19 vaccine is not reported in the literature. Other neurological side effects were reported the most common being Guillain-Barre syndrome [6,10,11]. In a case series by Roman et al., 43 cases of acute transverse myelitis and acute disseminated encephalomyelitis (ADEM) after COVID-19 were reported around the world with an incidence of 0.5 per million [12]. Only 3 cases occurred after the vaccination [12]. The clinical presentation consisted either of paraplegia or tetraplegia without any associated symptoms [12] and none had a presentation of unilateral neurological deficits. Also the MRI showed signs of lesions [12] and this was not the case in our patient.

Acute facial paralysis and Bell's palsy are also some of the neurological adverse events reported in the literature [13]. Facial nerve paralysis has already been described as an adverse event after vaccination against other pathogens, including influenza, hepatitis B, polio, diphtheria-tetanus-pertussis and acellular pertussis, and measles-mumps-rubella [14]. Mason et al. reported a case of another patient presenting with bilateral facial palsy 4 weeks after the covid-19 vaccine without any evident etiology and no associated symptoms [15]. Contrarily to our patient, the EMG in this patient showed over 70% of axonal loss in the left facial nerve when compared to the right one [15]. The patient was treated with corticosteroids and antivirals and significant improvement was achieved after 3 days of admission [15]. Our patient had no facial symptoms, the presentation consisted mostly of manifestations in the lower limb with no other symptoms. The treatment in our case was also symptomatic and rapid resolution of symptoms was observed.

Although these symptoms are serious, most of them resolve on their own and their incidence is very low. Not only the vaccine but also the disease itself is associated with certain paralysis. Rajesh et al. reported a case of a patient presenting with weakness in the four limbs with hyporeflexia after developing the usual symptoms of COVID-19 such as fever, dyspnea, cough, etc. [16]. Resolution of these neurologic symptoms was fast and the treatment was also symptomatic [16]. Acute transverse myelitis was more frequent after covid-19 than after its vaccine [12]. Also cases of bilateral voice cords palsies and Guillain-Barré syndrome were reported after SARS-COV-2 infection [17,18].

All in all, this makes the benefits of the COVID-19 vaccine highly outweigh the risks of these serious adverse events [19]. The morbidity and mortality of COVID-19 is way higher than the ones caused by these neurological side effects which makes it a necessity to keep this vaccination process in order to prevent infections with this devastating virus and reduce its mutations and thus its resistance [19].

Conclusion

Unilateral Trendelenburg gait and dorsiflexion of the ankle deficit is a new and first of its kind side effect of COVID-19 vaccination. Along with other neurological side effects of this vaccine, they remain rare, and their morbidity and mortality are way lower than the burden brought by the SARS-COV-2. Thus, vaccination should remain a priority in order to decrease transmission and mutations of this virus and hopefully end this pandemic.

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