

## Post-Covid-19 Vaccine Guillain-Barre Syndrome - A Case Report from Palestine

**Hamdoon Abu-Arish Ahmed\***

Department of Internal Medicine, Al-Ahli Hospital, Palestine

### Corresponding author:

Hamdoon Abu-Arish Ahmed, Department of Internal Medicine, Al-Ahli Hospital, Palestine

✉ hamdoon\_1999@yahoo.com

**Citation:** Ahmed H.A.A(2021) Post-Covid-19 Vaccine Guillain-Barre Syndrome - A Case Report from Palestine. Med Case Rep Vol.7 No.10.206

### Abstract

We present this case of a 50 year old gentleman with no previous history of SARS-CoV-2 infection or any recent viral or bacterial illnesses who presented with GBS 10 days after receiving the COVID-19 vaccination.

The diagnosis was based on physical examination, magnetic resonance imaging (MRI) of the spine, cerebrospinal fluid (CSF) analysis and electromyography (EMG).

The reported cases of GBS following vaccination supported the theory of molecular mimicry as an underlying pathophysiology for this disorder. However, research has not yet identified the exact mechanism at the molecular level. To the best of our knowledge this is the first case to be reported in Palestine. We hope that our report will encourage further research on this subject and will alarm healthcare professionals to put GBS in the differential diagnosis for patients who present with acute flaccid paralysis (AFP) after receiving the COVID-19 vaccine.

**Keywords:** SARS-CoV-2; Guillain-Barre Syndrome; Acute flaccid paralysis

**Received:** October 01, 2021; **Accepted:** October 19, 2021; **Published:** October 28, 2021

### Introduction

Guillain-Barre syndrome (GBS) is an immune-mediated peripheral neuropathy that was reported following meningococcus, polio, influenza and rabies vaccines. However, there is no well-established association with the COVID-19 vaccine yet. Clinical features include bilateral leg weakness that ascends to arms, respiratory muscles face and may progress to generalized flaccid paralysis. Distal paraesthesia's (hand or foot tingling) are common. Decreased or absent reflexes and autonomic disturbances [1].

Diagnosis is based on clinical features, cerebrospinal fluid testing, and nerve conduction studies. Patients should be hospitalized for multidisciplinary supportive care and monitoring for respiratory and autonomic complications. Plasma exchange therapy has been shown to improve short-term and long-term outcomes, and intravenous immune globulin has been shown to hasten recovery in adults and children.

About 3 percent of patients with Guillain-Barre syndrome die. Neurologic problems persist in up to 20 percent of patients with the disease, and one-half of these patients are severely disabled. However, the benefit of vaccines in preventing disease and decreasing morbidity and mortality, particularly for influenza, needs to be weighed against the potential risk of GBS.

### Case Presentation

A 50 year old male patient with medical history of Hypertension, referred to the Department of Internal Medicine of Al-Ahli Hospital with 10 days history of sudden onset progressive bilateral

lower limb weakness and paresthesia that started from the tips of all toes and extended proximally up to the knees.

The patient was doing well previously and denied any history of recent trauma, fever, upper respiratory or gastrointestinal tract illness. He had received the COVID-19 vaccine (Sputnik Light) 14 days prior to his presentation. This patient has never been diagnosed with COVID-19 [2]. There was no weight loss, night sweats or change in bowel habits. No history of loss of consciousness, headaches, urine or stool incontinence.

On physical examination, the patient was vitally stable, afebrile and on room air with no signs of distress. Neurological examination showed decreased sensation in both upper and lower limbs. Motor strength grade was 5/5 in upper limbs and 3/5 in both lower limbs, proximally and distally. There was paresthesia in the tips of all fingers and toes. The patient was not able to walk or maintain sitting position without support. His reflexes were absent in the both ankles and knees, and normal in the upper limbs. There was no nystagmus, dysdiadochokinesia or intention tremor. Meningeal Signs were negative. Examination of the cranial nerves and other systems was normal. Complete blood count showed normal leukocyte count of  $8.992 \times 10^3/\mu\text{L}$  (reference range  $5-10 \times 10^3/\mu\text{L}$ , normal hemoglobin and platelet count. Serum Electrolytes was within the normal ranges. His renal, hepatic and coagulation profile were normal. C-reactive protein was normal. Serum TSH and Vitamin B12 levels were also normal. COVID-19 PCR from a nasopharyngeal swab was negative.

MRI of the whole spine showed D11/12 diffuse posterior disc bulge indenting the thecal sac ventrally, L4/5 mild diffuse

posterior disc bulge gently abutting the thecal sac ventrally, no paraspinous soft tissue lesions or inflammatory changes (**Figure 1**). Magnetic resonance imaging of the brain was negative for any acute changes in the cerebellum and brainstem. A lumbar puncture was performed, and cerebrospinal fluid analysis showed normal glucose in addition to normal white and red blood cell counts. Additionally, CSF analysis showed high protein at 0.6 gm/L (reference range 0.15–0.5 gm/L) and elevated albumin at 390 mg/L (reference range 0–350 mg/L). Gram stain and culture of the CSF were both negative.



**Figure 1** Magnetic resonance image of the spine showing posterior disc bulging of D11/12 and L3/4

Nerve conduction study (NCS) and electromyogram (EMG) showed findings consistent with polyneuroradiculopathy. Based on the previous work up a diagnosis of GBS was made. The patient had stable serial respiratory examinations. Throughout his stay in the hospital he was maintained on Esomeprazole 40mg PO, Enalapril 10mg PO, Enoxaparin Sodium 40mg S.C, Methylprednisolone 1g

IV and Duloxetine 30mg PO.

A short term catheter was inserted into the right internal jugular vein with ultrasound guidance, heparinization and fixation was done. And the patient was prepared to receive plasmapheresis.

The patient had received five sessions of plasmapheresis in 10 days, after which he showed signs of improvement in ambulation and overall function with a motor power of 5 proximally and distally of both upper and lower limbs. He tolerated plasmapheresis without experiencing any side effects. He also received Physiotherapy sessions for gait training, range of motion exercises, endurance, strength and functional activities as he remained stable and responded well, he was discharged in good general condition as he started to walk with mild support by a walker device.

## Discussion

The first case of GBS following COVID-19 vaccination was reported in February 2021 in the USA in an elderly female who presented 2 weeks after the first dose of the vaccine. The patient presented with fatigue and bilateral symmetric weakness of the lower limbs. CSF analysis showed albumin cytochemical dissociation and she was started on IVIG which led to improvement in the weakness. The patient recovered successfully and was discharged to a rehabilitation institute thereafter.

With the increased number of received COVID-19 vaccinations, there were increased reports of side effects of the vaccine including systemic and local manifestations and asymptomatic laboratory abnormalities.

The U.S. Food and Drug Administration (FDA) recently issued a warning that the single-dose vaccine is associated with an increased risk of developing Guillain-Barre syndrome (GBS) [3].

In the U.S., an estimated 146 million fully vaccinated people have received either the Modern or Pfizer COVID-19 vaccines (both of which require two doses). To date, the FDA has not seen a statistical increase in GBS in patients who received the Modern and Pfizer COVID-19 vaccines.

Among the various side effects reported for different vaccines, neurological events can be among the most severe and thus of most concern. The potential association of vaccines and GBS was first brought to attention in 1976, following an influenza outbreak among new US Army recruits, which prompted the development of a new vaccine, and a mass vaccination campaign throughout the USA, due to fears of a possible influenza pandemic similar to that seen in the Spanish Flu in 1918. Several cases of GBS were noted to be reported once the vaccination programme had commenced, and within a few months, the vaccination campaign was abandoned altogether. Surveillance for GBS cases thereafter revealed an almost 10-fold increased risk of development of GBS during the 6 weeks following receipt of the 1976 vaccine.

No clear pathogenesis has thus far been discovered. It has been postulated that contaminating proteins or other vaccine components may elicit anti-ganglioside antibody production, and that the increased filtration and purification steps used in more

recent vaccines help to reduce, but not completely eliminate, this risk [4].

## Conclusion

As there is increased numbers of reported cases of GBS after COVID-19 vaccination, it's important to find out if there is any causal relationship between COVID-19 vaccine and GBS. We hope that our case will encourage further research on this subject and will alarm healthcare professionals put GBS in the differential diagnosis for patients who present with acute flaccid paralysis (AFP) after receiving the COVID-19 vaccine.

## Acknowledgement

None

## Conflict of Interest

None

## Consent for Publication

Written informed consent was obtained from the patient for publication of this case report and the accompanying image.

## Ethical Approval

Written informed consent was obtained from the patient for

publication of this case report and the accompanying image.

## Availability of Data and Materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

## Funding

This article did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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