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Bilateral facial palsy with paresthesias, variant of Guillain-Barré syndrome following COVID-19 vaccine: A case series of 9 patients

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A R T I C L E   I N F O

Article history:
Received 10 October 2021
Revised 24 April 2022
Accepted 9 May 2022

Keywords:
Guillain-Barré Syndrome (GBS)
Bilateral Facial Palsy (BFP)
Facial diplegia
COVID-19 vaccine

A B S T R A C T

Several cases of Guillain-Barré Syndrome (GBS) associated with COVID-19 vaccination have been reported, including the rare subtype known as Bilateral Facial Palsy with paresthesias (BFP). To date, it is not known whether a causal relationship may exist between the two. We report 9 cases of BFP in patients vaccinated against COVID-19 in the previous month. Nerve conduction studies revealed demyelinating polyneuropathy in 4 patients, and 5 presented bilateral, focal facial nerve involvement, exclusively. Ganglioside antibody panel was positive in 4 patients (anti-GM1=2, anti-GD1a=1 and anti-sulfatide=1). Seven patients received intravenous immunoglobulin treatment, one plasma exchange, and one patient died from sudden cardiac arrest following arrhythmia before treatment could be administered. Rates of BFP following COVID-19 vaccination, did not differ from those reported in previous series. Epidemiological studies are essential to determine whether a causal relationship may exist between this rare form of GBS and COVID-19 vaccination.

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1. Introduction

In the context of mass worldwide COVID-19 vaccination programs conducted to control the pandemic, several cases of Guillain-Barré Syndrome (GBS) developing within 4 weeks immunization against the virus have recently been reported [1–5]. Current evidence suggests these are overlapping, concurrent events, with no causal relationship between them [6].

We report a series of 9 cases of the GBS variant known as Bilateral Facial Palsy with Paresthesias (BFP), admitted to six different hospitals in the city of Buenos Aires, Argentina, within a six-month period (February/2021-August/2021).

1.1. Case 1

A 56-year-old woman developed bilateral facial weakness and distal paresthesia in all 4 limbs, 19 days after the first dose of Sputnik V vaccine. Sensory examination and reflexes were normal.

1.2. Case 2

A 55-year-old male was admitted to hospital due to bilateral facial palsy and paresthesias in both hands and feet. Twenty-eight days prior to symptom onset, he had received the first dose of Sputnik V vaccine. Patient referred no pain. Reduced bicipital and patellar reflexes were observed.

1.3. Case 3

An 87-year-old man presented with bilateral facial weakness, 17 days after the first dose of Sputnik V vaccine. Patient experienced distal paresthesias in all four limbs, but denied having pain. On physical examination, lower cranial nerve involvement and deep tendon reflexes were decreased in all four limbs. Five days after admission, the patient died as a result of sudden-onset arrhythmia before any treatment was administered.

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https://doi.org/10.1016/j.nmd.2022.05.003
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Fig. 1. (A) T2-FLAIR weighted and (B) postcontrast T1-weighted axial images of the brain. (A) Normal appearance of brain parenchyma, ventricles and subarachnoid space, on the T2-weighted image. (B) Post-contrast T1-weighted image shows smooth contrast enhancement on both facial nerves (arrows).

Table 1
Demographics, results, treatments and clinical outcomes.

| Case | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    |
|------|------|------|------|------|------|------|------|------|------|
| Gender         | F    | M    | M    | M    | M    | M    | F    | M    | M    |
| Age (years)    | 56   | 55   | 87   | 50   | 39   | 42   | 52   | 43   | 65   |
| Covid-19 vaccine| Sputnik V | Sputnik V | Sputnik V | Astra-Zeneca | Sputnik V | Astra-Zeneca | Astra-Zeneca | Sputnik V | Astra-Zeneca |
| Number of doses| 1st  | 1st  | 1st  | 1st  | 1st  | 1st  | 1st  | 1st  | 2nd  |
| Days from vaccine to GBS | 19   | 28   | 17   | 20   | 10   | 28   | 13   | 13   | 13   |
| Pain           | No   | No   | Yes  | No   | Yes  | Yes  | Yes  | Yes  | Yes  |
| CSF protein (mg/dl) | 43   | 580  | 293  | 116  | 85   | 112  | 156  | 108  | 128  |
| CSF white cells (mm3) | 2    | 2    | 5    | 0    | 0    | 0    | 0    | 12   | 2    |
| HIV serology   | Negative | Negative | Negative | Negative | Negative | Negative | Negative | Negative | Negative |
| Chest X-Ray    | Normal | Normal | GD1a positive | Normal | Normal | − | Normal | Normal | Normal |
| Anti-Ganglioside antibodies | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| Brain MRI      | FDFN | FDN   | AIDP | AIDP | FDFN | FDN   | AIDP | AIDP | FDN   |
| Electrophysiological Classification | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| Days from GBS to NCS | 8    | 28   | 3    | 18   | 23   | 10   | 20   | 53   | 7    |
| Treatment      | IVlg  | IVlg | Nil  | IVlg | IVlg | IVlg | PE   | IVlg | IVlg |
| Outcome        | Clinical improvement | Clinical improvement | Sudden arrhythmia | Clinical improvement | Clinical improvement | Clinical improvement | Clinical improvement | Clinical improvement | Clinical improvement |

References:

GBS= Guillain-Barré syndrome; F= Female; M= Male; CSF= Cerebrospinal fluid; HIV= Human immunodeficiency virus; AIDP= Acute inflammatory demyelinating polyneuropathy; FDFN= Focal demyelination of facial nerves; NCS= Nerve conduction study; IVlg= Intravenous immunoglobulin; PE= Plasma exchange.

14. Case 4

A 50-year-old male developed bilateral facial palsy 20 days following vaccination with the first dose of Covishield/AstraZeneca vaccine. He presented generalized areflexia and paresthesias, but no pain.

15. Case 5

A 39-year-old man presented with a 5-day history of severe bilateral facial weakness, altered taste and paresthesias in both feet. Ten days prior to symptom onset, he had received the first dose of Sputnik V vaccine.

16. Case 6

A 42-year-old man referred bilateral facial weakness, paresthesias and radicular pain, 28 days after vaccination with the first dose of Covishield/AstraZeneca vaccine. Physical examination showed generalized hyporeflexia.

17. Case 7

A 52-year-old female came to the emergency department with bilateral facial palsy 13 days after the first dose of Covishield/AstraZeneca vaccine. At initial evaluation, hypoesthesia and absent deep tendon reflexes were observed. Paresthesias were present in all four limbs.
1.8. Case 8

A 43-year-old male experienced bilateral facial weakness 13 days following vaccination with the second dose of Sputnik V vaccine. Lower cranial nerve involvement was confirmed. Patient referred radicular pain and paresthesias. Deep tendon reflexes were depressed.

1.9. Case 9

A 65-year-old man presented with a 2-week history of severe cramping pain in his legs starting one week after receiving the Covishield /AstraZeneca vaccine. Three days later, patient developed numbness in his feet and hands, spreading proximally to the ankles. One week prior to admission, he had developed progressive right facial weakness, which evolved to become severe and bilateral after 5 days. On examination, bilateral facial weakness was confirmed, the rest of the neurological exam was normal.

2. Discussion

We present 9 cases of bilateral facial palsy with paresthesias in all four limbs, 5 of which referred pain during the acute phase. Routine laboratory and HIV tests as well as chest X-rays were obtained in all cases. No evidence of underlying systemic disease was found. Lumbar puncture performed to rule out infection showed albuminocytological dissociation (ACD) was present in 7. Brain magnetic resonance imaging (MRI) available in eight patients, showed smooth contrast enhancement of both facial nerves in one case, with no other signs of brain injury (Fig. 1).

Sensory and motor nerve conduction studies performed on all patients, using a standard method investigating both facial nerves and all four limbs [7] showed two different patterns on nerve conduction studies (NCS). One group of patients (n = 4) presented demyelinating polyneuropathy, and the other (n = 5) showed focal amplitude involvement and distal latencies along both facial nerves. No abnormalities were detected in peripheral nerves, nor were significant differences observed between groups with respect to clinical presentation or delay to NCS.

Ganglioside antibody panel was positive in 4 patients (two anti-GM1, two anti-GD1a and one anti-sulfatide antibody, respectively). Seven patients received intravenous immunoglobulin, and in one patient plasma exchange was performed. Clinical improvement was observed in all cases, with the exception of case number 3, who died following sudden onset of arrhythmia and cardiac arrest, before treatment could be administered. Test results, treatments and outcomes are summarized in Table 1.

Increasing numbers of BFP cases have been identified in the last 6 months. This appears to be in contrast with levels in previously published GBS series, in which the BFP subtype usually corresponds to less than 5% of the total [8].

One possible explanation for this discrepancy may be increased patient monitoring and therefore greater GBS detection, in the context of the current COVID-19 pandemic. Social distancing could also play a significant role in decreasing circulation of other classic infectious agents triggering GBS. One recent series described 5 cases of BFP, 7–12 days after administration of the AstraZeneca vaccine [ChAdOx1-S] [9].

In our series, BFP was diagnosed in 9 cases after vaccination against COVID-19 (Sputnik V = 5 and AstraZeneca = 4). Clinical presentation was similar to previously published findings. Further surveillance and epidemiological studies will be necessary to better establish vaccine safety, and rule out a possible causal relationship between vaccination and this rare form of GBS.

Ethical publication statement

Authors confirm having read the Journal’s position on issues involved in ethical publication and affirm this report is consistent with those guidelines.

Funding information

No targeted funding reported.

Declaration of Competing Interest

The authors declare no conflicts of interest.

Acknowledgment

Teaching and Research Committee, Raúl Carrea Institute for Neurological Research (FLENI).

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