Journal of
CLINICAL
NEUROMUSCULAR
DISEASE

Volume 23, Number 4
June 2022

OPEN

Parsonage Turner Syndrome Following Vaccination With mRNA-1273 SARS-CoV-2 Vaccine

To the Editor:

We report a 42-year-old woman who woke 3 weeks after her second dose of mRNA-1273 SARS CoV-2 vaccine with severe left shoulder pain and paresthesia radiating down the left upper extremity. In the Emergency Department the following day, she was noted to have diminished grip because of pain, but no proximal upper extremity weakness. When seen by an orthopedist 10 days after her Emergency Department visit, she had cutaneous allodynia over the left shoulder and was noticing fasciculations in her left upper extremity. On examination at that time, she had left medial scapular winging with forward elevation of the left arm and push against resistance. Strength of internal rotation, external rotation, and abduction of the left shoulder were graded at 4/5. A left shoulder magnetic resonance imaging study performed 7 days after onset was unrevealing. Her cervical spine magnetic resonance imaging revealed disk bulges between the fifth and sixth cervical vertebral and between the sixth and seventh cervical vertebrae, but without nerve root compromise.

She was treated with prednisone 20 mg daily, gabapentin 100 mg 3 times daily, and physical therapy. Two months after her vaccination, her pain was manageable and she had no residual objective motor deficit, although she still reported mild limitation using the left upper extremity. Electromyography and nerve conduction studies revealed evidence of a subacute left upper trunk brachial plexopathy.

DISCUSSION

Parsonage–Turner Syndrome (idiopathic brachial plexopathy, neuralgic amyotrophy) is a clinical syndrome characterized by rapid onset of severe, usually unilateral, shoulder and upper extremity pain followed by upper extremity numbness and weakness of predominantly shoulder girdle muscles.[1] It is generally self-limited and improves or resolves over several months.[1] The upper trunk of the brachial plexus, suprascapular nerve, long thoracic nerve, axillary nerve, and anterior interosseous nerve are most commonly affected by this syndrome.[1] Symptoms are often preceded by a triggering event such as surgery, infection, or vaccination.[1]

Our patient had characteristic clinical features of Parsonage–Turner syndrome (neuralgic amyotrophy) with involvement of the upper trunk of the left brachial plexus and left medial scapular winging with left arm forward, suggesting clinical involvement of her left long thoracic nerve. Our patient's symptoms began 3 weeks after completing vaccination with mRNA-1273 SARS CoV-2 (manufactured by Moderna). Parsonage–Turner syndrome has been reported previously with the BNT162b2 SARS-CoV-2 vaccine (manufactured by Pfizer) and ChAdOx1 nCoV-19 vaccine (manufactured by AstraZeneca).[2,3]

Although clinicians should remain aware of this potential complication of SARS-CoV-2 vaccination to facilitate appropriate diagnosis and management, its incidence is very rare. Over 190 million Americans have been fully vaccinated with Pfizer's BNT162b2 SARS-CoV-2 vaccine, Moderna's mRNA-1273 SARS-CoV-2, or Johnson and Johnson's Ad26.COV2.S vaccine, but there have only been 17 incidents reported as "brachial plexopathy" or "brachial plexus injury" with the Pfizer vaccine in the Vaccine Adverse Event Reporting System (VAERS), 8 with the Moderna vaccine and 3 with the Johnson and Johnson vaccine.[4,5] Therefore, the incidence of this potential complication should not discourage vaccination to prevent the much higher risks of morbidity and mortality with SARS-CoV-2 infection.

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G. Gasbarro has no financial relationships to disclose. J. H. Bernheimer has received remuneration for work as a medical reviewer of online articles for *Prevention* magazine.

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Pfizer mRNA COVID-19 Vaccination and Acute Inflammatory Demyelinating Polyneuropathy

To the Editor:

We report a case of acute demyelinating polyneuropathy (AIDP) or Guillain–Barré syndrome (GBS) that developed after receiving the second dose of the Pfizer–BioNTech COVID-19 vaccine.

A 52-year-old woman presented with rapidly progressing paresthesia/dysesthesia of her bilateral feet and hands a day after receiving the second dose of the vaccine with no preceding respiratory or gastrointestinal illness. Vital signs were normal. Neurological examination showed bilateral decreased sensation to pain, temperature, and touch extending from the toes to the shins and the fingers to the forearms. Ankle reflexes were absent with all other reflexes present and no sensory level. Medical Research Council muscular strength was 5/5 throughout.

Cerebral spinal fluid was remarkable for increased protein at 53 mg/dL (normal 20–40 mg/dL) and no cells consistent with albuminocytologic dissociation. Thoracic spine Magnetic Resonance Imaging showed multilevel mild disc degeneration at T2–3, T7–8, and a syrinx at T6–9. Brain Magnetic Resonance Imaging with and without contrast was within normal limits. Serum tests including antiganglioside antibodies, nasopharyngeal SARS-CoV-2 screen nucleic acid amplification screen, and COVID-19 antibodies were negative.

Five-day Intravenous Immunoglobulin therapy 400 mg/kg was initiated to treat dysimmune-mediated AIDP. Electromyography performed on day 3 showed absent peroneal F-waves and H-reflexes bilaterally, indicative of proximal motor conduction block. On 3-month follow-up, sensory symptoms receded to the fingers and toes. A skin biopsy showed significantly reduced epidermal nerve fiber density consistent with length-dependent small fiber neuropathy.

AIDP/GBS has not been reported from clinical trials of the Pfizer COVID-19 vaccine.[1] The Johnson and Johnson COVID-19 vaccination which uses an adenovirus vector trial reported 2 patients developing GBS, 1 in the placebo and 1 in the active arm of the study.[2] Recently, there have been 11 cases of variants of GBS occurring within 3 weeks of vaccination with the Oxford–AstraZeneca SARS-CoV-2 vaccine.[3] To date, there are 2 published case reports of GBS and Pfizer vaccination.[4,5] The Pfizer vaccine prevents infection by using the virus S protein through mRNA containing no additional immunologic material known to trigger GBS. It is possible that the antibodies may be generated in direct response to the SARS-CoV-2 spike protein. However, a less specific immune response to the adenovirus vector may also be possible, considering the multiple cases with AstraZeneca vaccination.[3]

Considering the natural incidence of GBS in adults is 8–19 per million, it is expected