



## Parsonage Turner Syndrome After ChAdOx1 nCoV- 19 Corona Virus Vaccine Administration

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### ARTICLE HISTORY

Received: 18.04.2022

Accepted: 16.05.2022

Available online: 30.03.2022

### DOI:

10.5530/ajphs.2022.12.15

### Keywords:

Parsonage Turner Syndrome.

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### ABSTRACT

Parsonage Turner Syndrome (PTS) , also known as Neuralgic Amyotrophy or Brachial Neuritis, is an idiopathic rare condition which is associated with paresis of upper extremity . The incidence is about 1.64 cases per 10000 people and predominantly seen in men. The syndrome is characterised by abrupt pain that arise from the shoulder girdle lasting for about 3 to 4 weeks which is followed by weakness and thereafter muscle wasting , lasting for several months before a variable recovery. Here we report a case of PTS in a 41 year old male patient following administration of the ChAdOx1 nCoV- 19 Corona Virus Vaccine.

### INTRODUCTION

Parsonage Turner syndrome (PTS) is a clinical syndrome typically characterized by acute onset of unilateral severe pain in the shoulder and upper arm, followed by weakness in the proximal mid-arm or distal upper limb, often in the distribution of individual nerves. Symptoms are commonly preceded by a triggering event, such as infection, surgery, or less commonly, vaccination [1]. It is an uncommon condition with a reported overall incidence of 1.64 cases in 100,000 people [2]. It most commonly affects young adults and is characterized by acute onset of severe shoulder pain, most commonly unilateral, which may extend to the arm and hand. The condition is usually self-limiting and may last for 12 weeks, although less frequently, persistent pain has been reported. PTS is also characterized by associated delayed upper extremity weakness, muscle atrophy, and painless paresthesia, which tend to slowly and gradually resolve [3].

ChAdOx1 nCoV- 19 Corona Virus Vaccine uses a recombinant, replication-deficient chimpanzee adenovirus vector encoding the SARS-CoV-2 Spike (S) glycoprotein. It contains the following excipients - L-Histidine, L-Histidine hydrochloride monohydrate, Magnesium chloride hexahydrate, Polysorbate 80, Ethanol, Sucrose, Sodium chloride and Disodium edetate dehydrate [4].

Idiopathic brachial neuritis may be preceded with any infection, but usually have an unknown etiology [5]. Corticosteroids and physiotherapy is the mainstay in the management of PTS. Now electrical nerve stimulation (ENS) is also added with the drug therapy to improve outcome [6].

### CASE REPORT

A 41-year-old healthy male developed sudden onset of severe left periscapular pain 4 days after receiving the first dose of the ChAdOx1 nCoV- 19 Corona Virus vaccination in the left deltoid muscle. Initially, there was relief of pain associated with over the

counter NSAID use, but over the next 2-3 days pain extended into the forearm and started to disrupt sleep. One week later he developed left-hand grip and left wrist extension weakness, when he consulted a local hospital and was referred to our care.

Physical examination showed weakness of left dorsal interossei, extensor digitorum, extensor indicis, and flexor carpi ulnaris, left Biceps and triceps, left deltoid and periscapular muscles with significant atrophy over periscapular muscles as shown in [Figure 1]. Muscle stretch reflexes were normal bilaterally. No sensory deficits, bulbar weakness, or pathological upper motor neuron signs were seen. Electromyography (EMG) and Magnetic Resonance Imaging (MRI) of cervical spine were performed for the diagnosis of PTS.

Nerve conduction studies showed low CMAP amplitude with normal distal latencies and conduction velocity in left axillary, left musculocutaneous, left radial, left median and left ulnar nerves with reduced SNAP amplitude in left lateral and medial antebrachial nerves. Needle electromyography showed neurogenic pattern with late and incomplete recruitment with signs of active reinnervation in left posterior deltoid, left infraspinatus and left biceps muscles.

Erythrocyte sedimentation rate, C-reactive protein, and creatine kinase levels were normal. Serum ANCA, myeloperoxidase, proteinase-3, and anti-GM-1 antibodies were negative. MRI of the cervical spine without contrast done immediately after onset of weakness were normal. EMG of the sampled muscles suggested neurogenic pattern in left C5, C6, C7 territory (Left deltoid, left biceps, left triceps) and acute reinnervation in the left deltoid and left biceps. Management was done with intravenous Methyl Prednisolone pulse therapy 1g in 100ml NS for 5days and physiotherapy alongwith electrical

nerve stimulation and exercise. Subsequently, he was continued on tapering doses of oral steroids and occupational therapy started to maintain range of motion and facilitate ADLs. The diagnosis of PTS was established and patient was advised to continue physiotherapy.

## DISCUSSION

We describe a case report of Parsonage Turner syndrome following administration of the ChAdOx1 nCoV- 19 Corona Virus Vaccine (COVISHIELD™). The clinical presentation, electrodiagnostic findings of neurogenic pattern and late-incomplete recruitment in related myotomes, and improvement of symptoms after initiation of steroids support the diagnosis of PTS.

Patients with Parsonage Turner Syndrome typically present with a mild shoulder pain which is usually left undiagnosed or confused with other diagnoses and later treated with analgesics. On course of disease, the pain increase and will later only be referred to a neurologist. They mostly develop the pain at night principally involving one arm however there are cases involving both arms in asymmetric manner. In this patient only left arm was affected and the proximal muscle weakness was observed upon clinical examination.

Post vaccination PTS is rare and the incidence is not known. Vaccine Adverse Effect Reporting System reported only 18 cases of brachial neuritis following administration of seasonal influenza vaccination between 2018 to 2020 against approximately 350 million vaccinations[7]. It would be prudent to mention that the causality of PTS following vaccination is not established and the association is primarily temporal.



**Table 1 :** Left periscapular atrophy in patient with PTS

**Table 1 :** Review of available literature

Author	Vaccine	Age /Sex	Site of vaccination	Side of PTS	Days from vaccination to onset	Outcome
Mahajan S et al[8]	COVID-19 BNT162b2	50/M	Left deltoid	Left	7 days	Pain relief, mild improvement in pain
Burillo JAC et al[9]	Vaxzevria-vaccine	38/M	Left deltoid	Left	4 days	Improvement in pain
Diaz-Segarra N et al[10]	Pfizer-BioNtech	35/F	Right deltoid	Right	9 days	Significant strength and sensation improvement

## CONCLUSION

The global COVID-19 vaccination effort is critical in providing and ensuring public health and safety against the SARS-CoV-2 virus infection. Increased awareness of such associations may encourage further investigation of the pathophysiological impact of immunogenic events on nerve function, and may help prompt early initiation of treatment with steroids and improve clinical outcomes. Timely recognition and management is recommended.

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**Cite this article :** Helna Shaji, Anjaly M Raju, Amith K S, Lakshmi R  
Parsonage Turner Syndrome After ChAdOx1 nCoV- 19 Corona Virus Vaccine Administration  
*Asian J. Pharm. Hea. Sci.*. 2022;12(1):2680-2682. DOI : 10.5530/ajphs.2022.12.15