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Parsonage-Turner syndrome after COVID-19 vaccination: A case report

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Abstract

Parsonage-Turner syndrome (PTS) is one of the rare peripheral neuropathies that causes sudden and severe pain followed by sensory defect, loss of muscle strength and atrophy in the upper extremities. If a patient experiences persistent shoulder pain after COVID-19 vaccination, followed by weakness and sensory changes in the extremity, Parsonage-Turner syndrome should be considered in the differential diagnosis. We report a rare case of PTS that developed after COVID-19 vaccination.

Keywords: Parsonage-Turner syndrome, COVİD-19, vaccination

INTRODUCTION

Parsonage-Turner syndrome (PTS) (acute brachial plexus neuropathy, neuralgic amyotrophy) is a rare brachial plexopathy characterized by self-limiting, usually unilateral severe shoulder girdle and upper arm pain, followed by weakness and atrophy of the upper extremity lasting for several days or weeks.[1] The incidence rate is 1.64 per 100,000.[2] Recurrent brachial neuritis attacks can be associated with hereditary brachial plexus neuropathy, an autosomal dominant hereditary disorder due to mutations of the SEPT9 gene.[3] Although the exact cause of the idiopathic form is unknown, it is believed to be due to susceptibility to immunologic triggers and traumas on a genetic predisposition. Surgical procedures, childbirth, exercise, trauma, upper respiratory infections, vaccination, drug therapies, and systemic vasculitides are the most common triggers of PTS.[4,5]

CASE REPORT

A 47-year-old male patient with a medical history of hypertension and diabetes mellitus (DM). He presented with the complaint of severe pain in the left arm that started right after the second dose of the BNT162b2 mRNA vaccine and lasted for about 1 week-10 days, followed by weakness and atrophy in the same arm with a decrease in pain intensity. The left deltoid muscle was atrophic on the neurological examination compared to the right side. According to the Medical Research Council scale, muscle strengths were 0/5 for left arm abduction, 2/5 for adduction, and 4/5 for forearm flexion and extension. The left brachioradial reflex was found to be hypoactive. Electroneuromyography (ENMG) examination revealed no axillary sensory and motor responses on the left and partial axonal degeneration and regeneration in the upper trunk of the brachial plexus. Magnetic resonance imaging (MRI) showed denervation edema in the left supraspinatus and infraspinatus muscles (Figure 1). Investigations were unremarkable, including complete blood count, biochemical tests, erythrocyte sedimentation rate, C-reactive protein, and chest X-ray. The cerebrospinal fluid (CSF) was normal. In the serum and CSF, infection parameters, vasculitis markers in the serum, neoplastic panel, rheumatoid factor, and HLA-B27 were negative. Paracetamol and due to the diagnosis of DM and diabetic complications, intravenous immunoglobulin (IVIG) treatment was administered at a dose of 0.4 g/kg/day for five days. The patient's pain complaint was resolved entirely on the second day of IVIG treatment. Physical therapy was recommended after discharge.

DISCUSSION

PTS is a rare condition that Parsonage and Turner described in 1948.[6] PTS commonly presents with acute, widespread shoulder girdle and upper arm pain, followed by weakness and atrophy. Symptoms is usually self-limited and gradually

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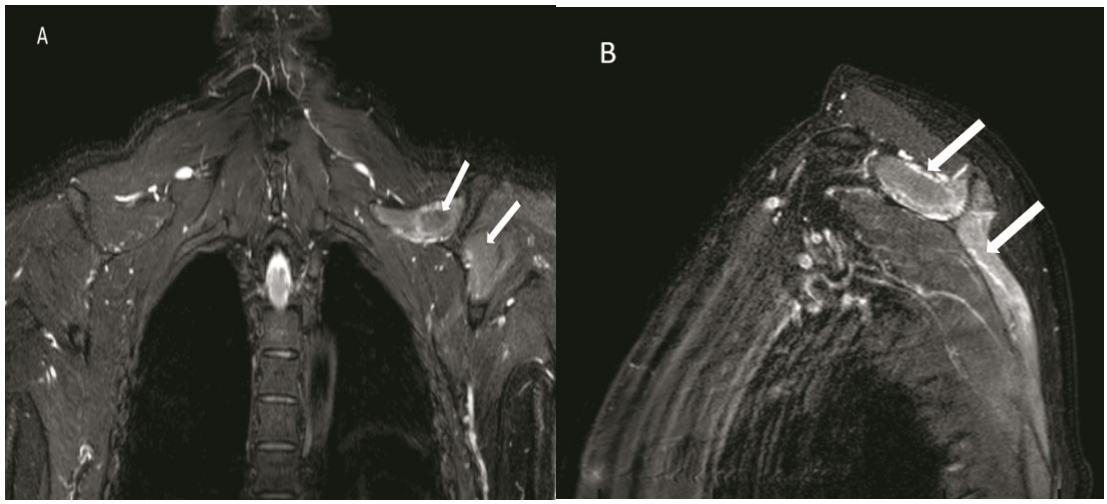

Figure 1. Coronal (A) and sagittal (B) T2W Dixon fat-suppressed images show hyperintense signals within the left supraspinatus and infraspinatus muscles, compatible with denervation edema.

improve within a few months, and most patients fully recover within 2-3 years.[7] In ENMG, findings of multifocal or patchy axonal loss can be detected. MRI changes can be seen in muscles of the brachial plexus nerve distribution, such as the supraspinatus and infraspinatus muscles, with diffuse T2 signal changes caused by muscle denervation and edema.[8] Intrinsic, hourglass-like constrictions (HLCs), a pathognomonic finding can be seen in nerves or nerve fascicles, identifiable using specialized imaging techniques such as peripheral nerve MRI, MR neurography, and ultrasound.[9] The CSF examination is often normal. For treatment, opioid analgesics is typically required for pain control; the use of immunotherapy is also recommended.[10] Physical therapy can help maintain the range of motion. Surgical treatments can be performed, especially in patients with HLCs of nerves.[11]

Cases of PTS have been reported after vaccines such as diphtheria, pertussis, tetanus, typhoid, HSV, H1N1, and others.[12] There have been few reported cases of PTS following COVID-19 vaccination in the literature.[13] Short-term shoulder pain is a common complaint seen after COVID-19 vaccination. However, if a patient continues to experience shoulder pain and develops changes such as weakness and atrophy in the extremity, PTS should be considered in the differential diagnosis.

The global COVID-19 vaccination effort is critical in ensuring public health and safety against SARS-CoV-2 viral infection. However, vaccination may also play an immune-triggering role and result in various immune based complications.

DISCLOSURE

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