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Letter to the editor

Parsonage-Turner syndrome and SARS-CoV-2 infection: A case report



ARTICLE INFO

Keywords:

Parsonage Turner syndrome
 COVID-19
 Viral infection
 Upper extremity

Mots-clés:

Parsonage-Turner
 Covid-19
 Infection virale
 Membre supérieur

Syndrome de Parsonage-Turner et infection au SRAS COVID-19 : à propos d'un cas

Dear Editor-in-Chief,

Parsonage-Turner syndrome (PTS), also known as idiopathic brachial plexopathy or brachial neuritis, is a rare condition (1.64 cases per 100,000 people) that affects young adults, although some cases have been reported in adults over 60 years of age [1]. It is mainly characterized by severe acute, unilateral shoulder pain that can extend to the rest of the arm [1]. The latter is not position dependent and subsides after 1–2 weeks. Weakness, muscle atrophy and paresthesia appear and then gradually recede [1,2]. While the diagnosis is mainly based on clinical findings, electromyography (EMG) and magnetic resonance imaging (MRI) examinations are essential to confirming the PTS diagnosis [3]. Treatment is based on class I (or higher) analgesics and corticosteroid therapy [4,5]. The etiology and pathophysiological are not well understood, although some precipitating situations have been identified, such as the post-operative, post-infection (viral in 25%–55% of cases) and post-vaccination period [1,3].

PTS has been reported recently following COVID-19 infections [2,6–9]. Here, we report one case of PTS involving the long thoracic and spinal accessory nerves. This was a 22-year-old male with no relevant history except for an episode of anterior dislocation of his right shoulder. Upon sudden development of torticollis, he took at PCR test for COVID-19 that came back positive. Three weeks later,

he presented at the emergency room because of pain in his cervical spine and right upper limb, with no signs of trauma. No paresthesia was present.

During the clinical examination, the patient had limited shoulder motion in abduction (45°) due to pain with visible atrophy of the trapezius muscle relative to the other side. He was unable to push against resistance in forward flexion. When examining his scapulothoracic region, there was an obvious winged scapula that mainly affected its medial edge and the ropey tendon of the inferior (ascending) portion of the trapezius was absent [4,10].

Given this presentation, EMG testing and MRI were requested. The EMG revealed denervation of the trapezius and serratus anterior muscles, while the MRI showed hyperintensity (edema) associated with denervation of these two muscles, confirming the diagnosis (Fig. 1). A 7-day course of oral corticosteroids was prescribed in combination with rehabilitation.

At the 6-month follow-up visit (Fig. 2), the shoulder's range of motion had improved with forward flexion of 100° and strength graded as 4/5 on the British Medical Council scale. Pain had disappeared and was graded as 0/10 on a visual analog scale. Conversely, the winged scapula was still present upon clinical examination, but the trapezius muscle was no longer visibly atrophied. A second MRI at 5 months showed persistent residual atrophy of the serratus anterior, but no edema in the trapezius muscle (Fig. 3).

In this clinical case, and given the suggestive clinical profile, EMG and MRI findings, we concluded that the long thoracic and spinal accessory nerves were involved. To our knowledge, this is the first reported case in France of PTS developing following a COVID-19 infection with long thoracic nerve involvement [2,3,7–9]. Two French articles have already mentioned isolated spinal accessory nerve and phrenic nerve involvement in PTS post-COVID-19 [6,11].

Knowing the timeline of the symptoms was essential to making the diagnosis as it allowed us to identify the triggering factor. In this case, there was a clear correlation with COVID-19 infection. Although some post-vaccination cases have been reported [12–15], PTS in our patient was likely not associated with vaccination, as he had been vaccinated a few months prior. We also systematically ruled out differential diagnoses for PTS, such as adhesive capsulitis, cervical hernia, subacromial bursitis, or even calcific tendinopathy of the supraspinatus [1].

Use of oral corticosteroids during the first month combined with physiotherapy helped to accelerate recovery [1,2,4,5]. As a general rule, complete PTS recovery occurs in 36% of patients at 1 year, 75% at 2 years and 89% at 3 years [16]. In our case, the patient had not recovered a functional range of motion 6 months

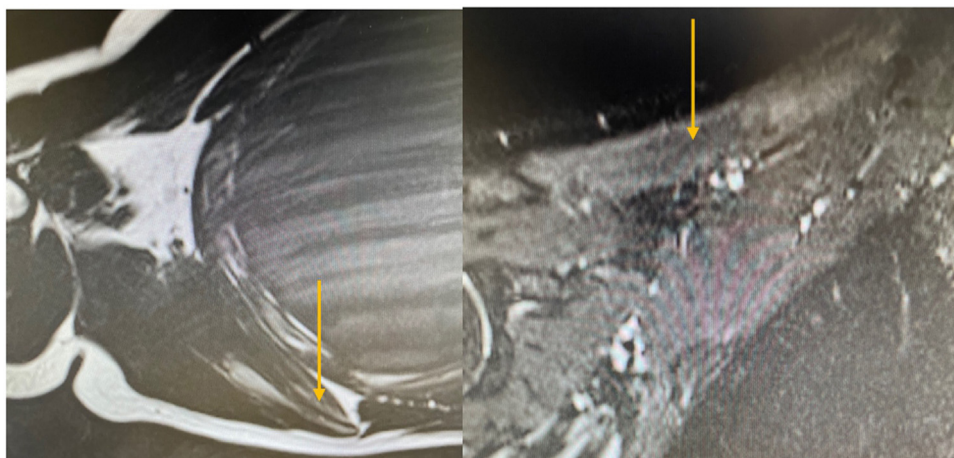


Fig. 1. Intra-muscular edema in the serratus anterior and trapezius muscles is evidence of denervation.



Fig. 2. Examination of the scapulothoracic region 6 months after the COVID-19 infection.

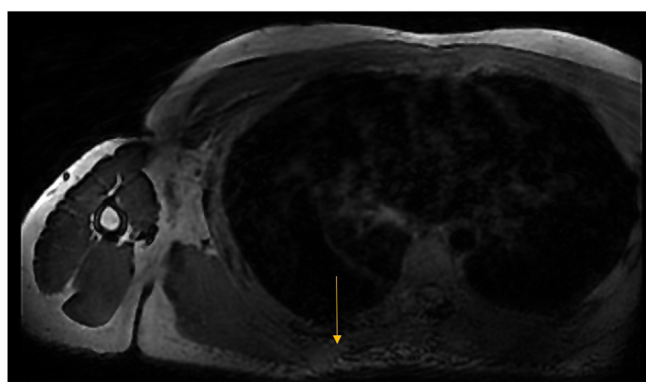


Fig. 3. MRI done at 5 months showing persistent atrophy of the serratus anterior muscle.

after PTS. This is consistent with the results described by Diaz et al. [3]; however, different nerves were involved. While not serious in the majority of cases, one study found PTS with an isolated phrenic nerve lesion, leading to diaphragm paralysis and a stay in the intensive care unit [6]. Thus, this pathology must not be underestimated.

Author contributions

All authors attest that they meet the current International Committee of Medical Journal Editors (ICMJE) criteria for Authorship

Conflict of interest

Laurent Obert has no specific conflict of interest related to this study but has relationships with the following organizations: FX Solutions™, Medartis™, Evolutis™, Keri Medical™, Elsevier™, CHRU of Besançon, University of Bourgogne Franche-Comté. The other authors have no conflicts of interest to declare.

Funding

None.

Informed consent

The authors declare that the patient’s informed consent was collected.

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Received 28 June 2022

Available online 20 October 2022