Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Therefore, we consider that it would be beneficial for the healthcare authorities to emphasise the importance of monitoring patients developing Bell's palsy after the administration of mRNA vaccines.

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Parsonage-Turner syndrome post-infection by SARS-CoV-2: a case report☆

Síndrome de Parsonage-Turner postinfección por SARS-CoV-2: a propósito de un caso

Dear Editor:

Parsonage-Turner syndrome (PTS) or acute brachial neuritis is a rare cause of neuromuscular involvement in the shoulder, characterised by sudden onset of intense pain followed by muscle weakness and atrophy.[1—3] Aetiology is heterogeneous; the immune-mediated response against the brachial plexus is considered an essential part of its aetiopathogenesis.[4] Although cases have been reported of viral infection before onset of brachial neuritis, there are currently no published cases of PTS associated with previous SARS-CoV-2 infection, as far as we are aware.

We describe the case of a 38-year-old man who developed PTS after severe bilateral pneumonia due to SARS-CoV-2 infection, who was admitted to the intensive care unit and treated with hydroxychloroquine, lopinavir/ritonavir, interferon beta, corticosteroids, and invasive mechanical ventilation. He was kept under deep sedation for several

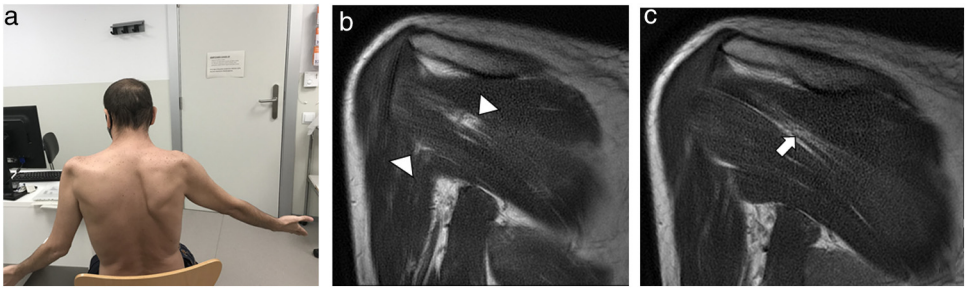

Figure 1 a) Patient with right scapular winging and limited range of shoulder movement. b) T1-weighted MRI sequence of the shoulder. Oedema of the bellies of the right infraspinatus and teres major muscles. c) Fatty infiltration in the belly of the right infraspinatus muscle.

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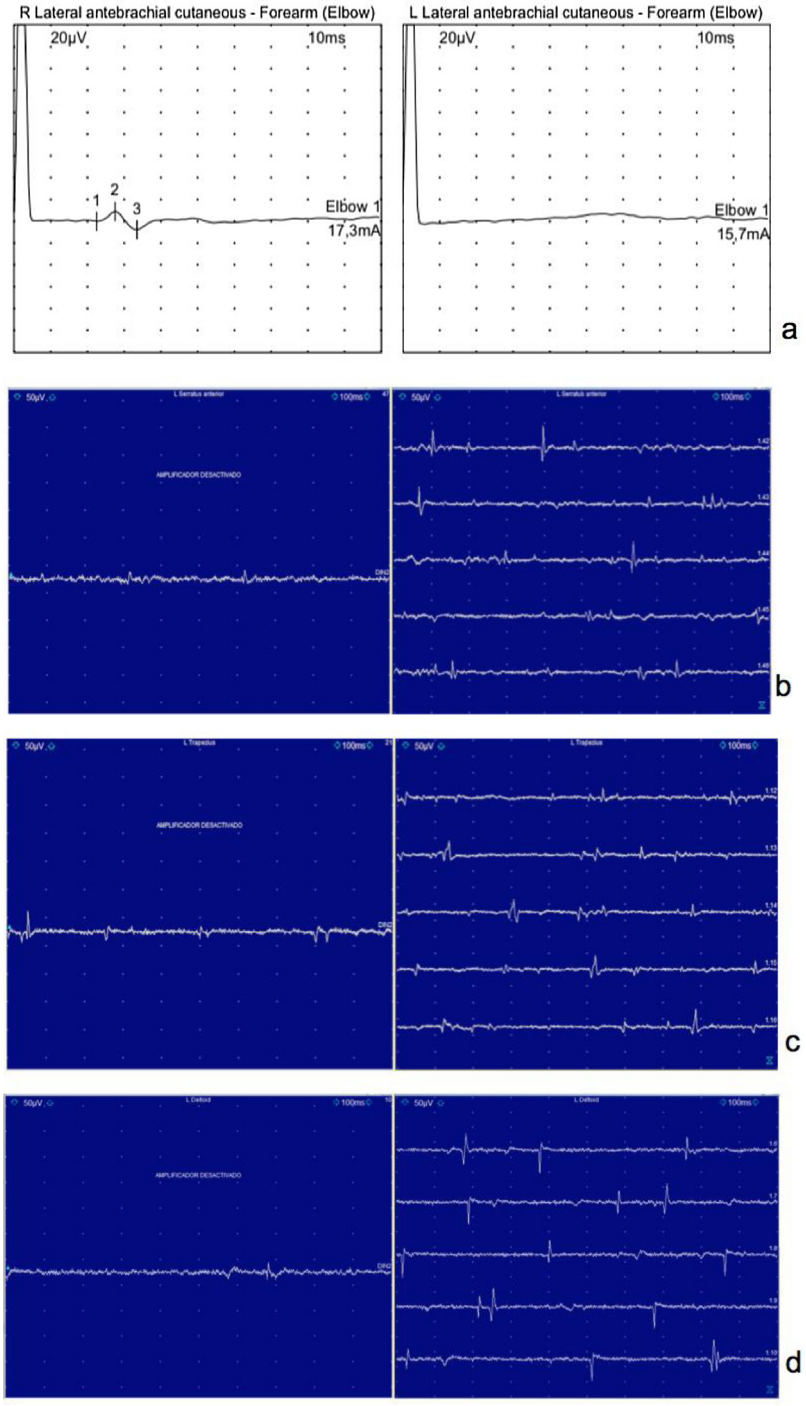

Figure 2 a) Lack of response in the left lateral antebrachial cutaneous nerve, but preserved response in the right side. b) Spontaneous activity in the left serratus anterior muscle. c) Spontaneous activity in the left trapezius muscle. d) Spontaneous activity in the left deltoid muscle.

days, and received prone position ventilation on 2 occasions. As a relevant complication, we should mention septic shock secondary to ischaemic pancolitis due to SARS-CoV-2 infection, which was confirmed by anatomical pathology; the patient underwent ileostomy surgery.

During a visit to the rehabilitation department for functional recovery, the patient reported a 5-day history of continuous, progressive pain in both shoulders accompanied by a burning and tingling sensation, which disrupted sleep and partially remitted with conventional analgesics. He subsequently presented progressive muscle weakness in both shoulders, which limited his ability to perform activities of daily living.

The physical examination revealed bilateral atrophy of the deltoid, supraspinatus, and infraspinatus muscles, right scapular winging, and hypoaesthesia in the deltoid

area (Fig. 1a). An electrophysiological study revealed left brachial plexopathy with predominant involvement of the segment proximal to the upper trunk and distal to the C5 nerve root, and absence of sensory response in the lateral antebrachial cutaneous nerve, with signs of acute motor axon loss in the trapezius, deltoid, and serratus anterior muscles (Fig. 2). An MRI study revealed oedema of the bellies of both infraspinatus muscles and tendinosis of both supraspinatus muscles (Fig. 1b and c).

In view of these findings, he was diagnosed with PTS. The patient was treated with non-steroidal anti-inflammatory drugs combined with long-acting opioids and prednisone. He also started rehabilitation therapy to improve balance and pain control.

PTS presents uncertain aetiology,[1] predominantly affects men,[1–3] and may be associated with viral infections, autoimmune mechanisms, immunisation, microtrauma, or surgical procedures.[2] Twenty-five percent of patients may present systemic viral infection prior to symptom onset[5,6] and almost one-third of patients present these symptoms bilaterally and symmetrically.

In terms of pathophysiology, sensitised lymphocytes have a special affinity for brachial plexus nerves, causing perineural oedema similar to that associated with urticaria.[4] Our main hypothesis is that SARS-CoV-2 infection triggered an immune-mediated reaction involving the brachial plexus. Trauma may reasonably be ruled out as the cause of the symptoms, as the patient was only placed in the prone position on 2 occasions, presenting no pain or limitation of shoulder movement during hospitalisation. Numerous reports in the literature describe neurological symptoms and diseases in patients with SARS-CoV-2 infection during the COVID-19 pandemic, including ischaemic cerebrovascular disease,[7,8] polyneuropathies, and even necrotising encephalomyelitis attributed to a neuroinvasive effect in a patient with COVID-19.[7,8]

Diagnostic suspicion of PTS is established according to the symptoms reported by the patient and supported by the electrophysiological study, which in addition to enabling a better identification of the condition, also helps to rule out other possible causes and assess severity.[9–11] MRI has been demonstrated to be useful in diagnosing PTS; the characteristic pattern includes neurogenic muscle oedema followed by atrophy of the supraspinatus, infraspinatus, and deltoid muscles, as well as fatty infiltration.[1,12] All these findings were identified in our patient.

There is currently no specific treatment for this syndrome, as non-steroidal anti-inflammatory drugs are insufficient in the acute phase, and the use of opioids is necessary. Some studies use gabapentin for neuromodulation.[13] Rehabilitation therapy is essential to improve joint mobility and strength and to control pain. Outcomes are heterogeneous and depend on pain intensity, the extent of plexus involvement, and whether presentation is bilateral or unilateral; all of these factors are predictors of recovery.[14]

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Conflicts of interest

The authors have no conflicts of interest to declare.

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Amyotrophic neuralgia secondary to Vaxzevri (AstraZeneca) COVID-19 vaccine☆

Neuralgia amiotrófica secundaria a vacuna contra COVID-19 Vaxzevria (AstraZeneca)

Dear Editor:

In 1948, Parsonage et al.[1] published the first series of 136 patients with a clinical syndrome that they named amyotrophic neuralgia. The syndrome is typically characterised by subacute onset of shoulder pain, followed several days later by weakness and amyotrophy, secondary to brachial plexopathy[1]. Fifty percent of patients present various predisposing factors, such as infections, intense exercise, surgery, puerperium, and inoculation with different types of vaccines[2,3]. No cases associated with the Vaxveria vaccine against COVID-19 have yet been described.

We present the case of a 38-year-old man with coeliac disease and no other relevant history. Four days after receiving the Vaxzevria vaccine against COVID-19, he developed intense pain in the left shoulder, radiating to the scapular region and arm; pain persisted during rest and was exacerbated by movement. Neurological examination did not reveal any motor or sensory deficit, with the exception of functional weakness due to pain; stretch reflexes were preserved. A neurophysiological study of the left upper limb identified reduced amplitude of action potentials in the axillary, musculocutaneous, median, and radial nerves. The electromyography study detected fibrillations and positive waves in the extensor digitorum communis, abductor digiti minimi, first dorsal interosseous, and abductor pollicis brevis muscles. An MRI study of the shoulder showed mild left subacromial tendinopathy; a cervical MRI scan detected no abnormalities. The patient was diagnosed with amyotrophic neuralgia involving all 3 trunks of the left brachial plexus; treatment was started with a single 500-mg dose of intravenous methylprednisolone followed by prednisone dosed at 60 mg/day for 10 days, with the dosage subsequently reduced by 10 mg every 3 days, until the treatment was fully suspended. Pain improved and symptoms resolved at 2 weeks. Approximately 40 days after vaccination, he was able to practice sport for the first time, reporting significant dyspnoea with effort. A chest CT study revealed left diaphragm paralysis with mild left basilar atelectasis. We consulted the pulmonology department, who prescribed nocturnal continuous positive airway pressure.

The incidence of amyotrophic neuralgia is estimated at 1.64 cases per 100 000 population[4]. It is a condition of unknown origin, involving immune-mediated damage to the brachial plexus, probably facilitated by disruption of the blood-nerve barrier due to compression and stretching of the plexus[2]. Vaccines may trigger the proinflammatory response[4]. A case of amyotrophic neuralgia has been described following administration of the BNT162b2 vaccine against COVID-19 (Pfizer)[5]. Our patient was treated with the Vaxzevria vaccine (AstraZeneca). Another factor associated with the disease is SARS-CoV-2 infection; several cases of this association have been described[6—9].

Clinical involvement of the brachial plexus was mild, as the main findings were pain and functional weakness. However, electrophysiological studies confirmed brachial plexus involvement. The patient subsequently presented unilateral phrenic nerve dysfunction. Involvement of the phrenic nerve is reported in 7.6% of patients with amyotrophic neuralgia[10]. It may present unilaterally or bilaterally, with the predominant form of presentation varying in different series[10—12]. The most frequent symptoms are dyspnoea with effort, sleep disorders, and orthopnoea. Mean diagnostic delay is approximately 20 weeks; therefore, it is very important to be alert to these symptoms in any patient diagnosed with amyotrophic neuralgia, as these patients may benefit from treatment with non-invasive mechanical ventilation, depending on symptom severity. Most patients improve by 2 years of follow-up, although some series report no improvement in 24% of patients and sequelae in 44%[11].

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