

TYPICAL MRI FINDINGS IN PARSONAGE-TURNER SYNDROME

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ABSTRACT

Parsonage-Turner syndrome is self limiting neuritis affecting the brachial plexus. Although any trunk can be affected by the Parsonage turners syndrome, the suprascapular nerve, axillary nerve and long thoracic nerve are commonly involved. MRI is useful adjunct investigation to electrophysiological testing for the diagnosis of Parsonage-Turner syndrome. MRI can show the secondary changes in muscle due to denervation. The distribution of involvement gives clue to nerve involved. In acute stage of the disease diffuse muscle edema can be seen. In sub acute stage atrophy is seen with persisting edema. In chronic phase, muscle may revert back to normal signal.

Keywords: Parsonage-Turner syndrome, denervation.

INTRODUCTION

Parsonage-Turner syndrome (PTS) is self-limiting neuritis affecting the brachial plexus. The denervation produces abnormal signals in group of the muscle supplied by the affected nerve. Although, diagnosis can be made on clinical grounds, it is important for radiologists to familiarize themselves with the imaging appearances as they are an important adjunct investigation to electromyography. Our aim in this article is to illustrate the classical imaging appearance of the PTS. We are presenting a case report of one of this less common but rather important condition, which may be confused with other causes of shoulder pain.

CASE REPORT

27 year old male patient, presented with history of pain, weakness and wasting of left shoulder of three months duration. At the onset of the symptoms, patient experienced severe sharp localized pain over the left shoulder. Pain subsided without any medica-

tion, but weakness persisted in the form of inability to raise the arm above the shoulder joint. On further questioning, he gave history of similar episodes of pain ten years back on right side, which was relieved over a period of three years. There was one more episode one year back, affecting the left shoulder which resolved with conservative management. The examination revealed wasting of the muscles over the scapula. Muscle power for initial 90° abduction at left shoulder joint, was 3/5 and beyond the 90°, it was 4/5. External rotators demonstrated 3/5 power. Muscle power at elbow and wrist joint was normal. Patient was referred for MRI with clinical diagnosis of brachial plexitis. Supraspinatous tear and impingement syndromes were also considered in clinical differential diagnosis. MRI did not reveal any significant disc bulges or abnormal signal in the brachial plexus (not shown). The supraspinatous tendon showed normal signal and no significant osteophytes were detected in the subacromian space to suggest impingement. Supraspinatous muscle showed atrophy and fatty infiltration (Figure 1). Post-contrast scan showed enhancement of this muscle. In view of the muscle

involved, which is supplied by suprascapular nerve and absence any evidence of entrapment along the course of the suprascapular nerve, PTS was suggested.

The motor nerve conduction study showed prolonged distal latencies in left supraclavicular nerve to infraspinatus and right suprascapular nerve to supraspinatus muscle. The sensory conduction study did not reveal any abnormality. Needle EMG showed denervation in left infraspinatus, right infraspinatus and right deltoid muscle. EMG study is suggestive of recent left upper and old right upper brachial plexopathy.

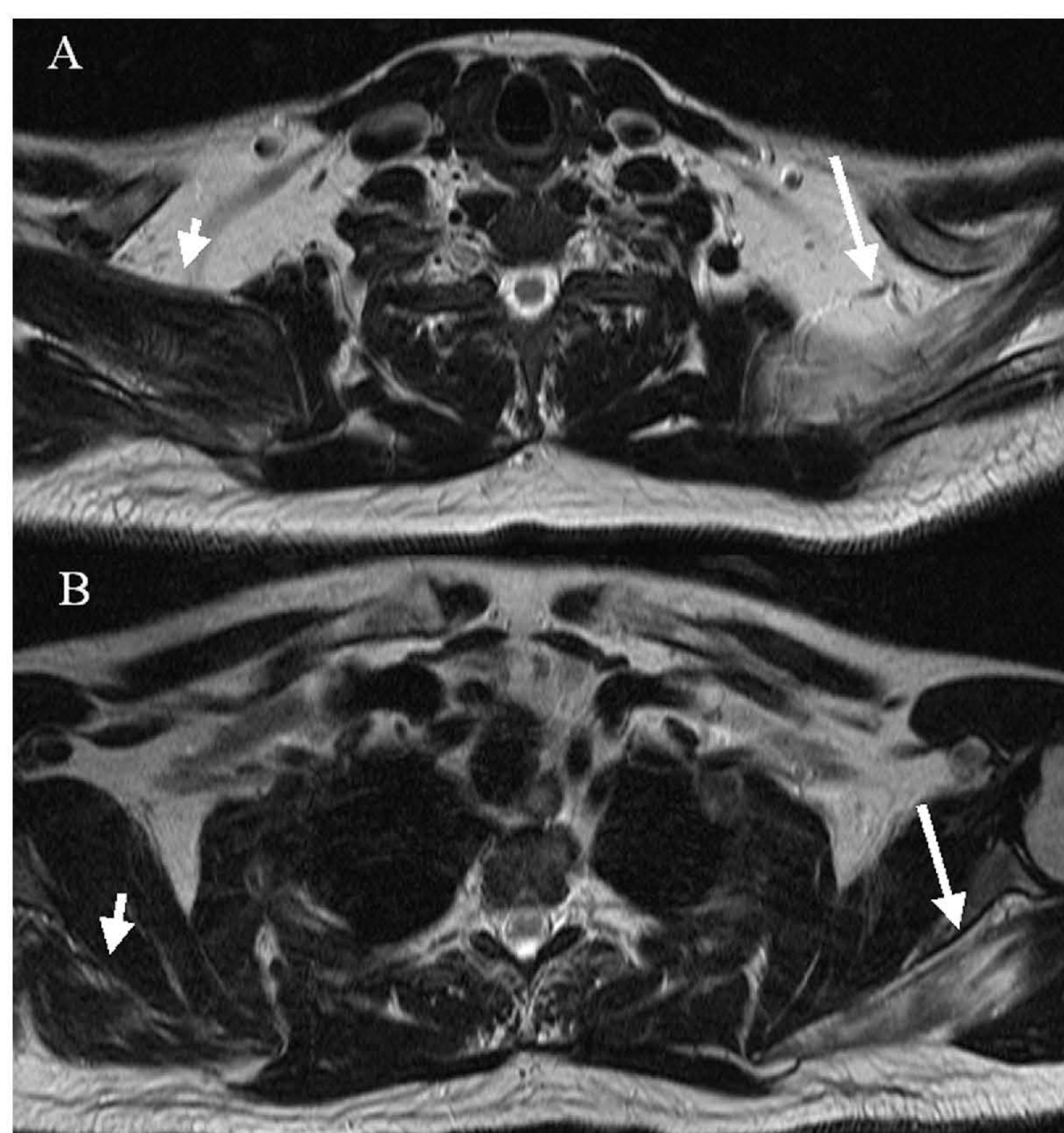


Figure 1. Axial T2 weighted images showing the hyperintense left supraspinatus muscle (long arrow in figure A) and left infraspinatus muscle (long arrow in figure B). Right infraspinatus muscle shows mild atrophy without edema (short arrow in figure B). Right supraspinatus muscle was unremarkable (short arrow in figure A).

DISCUSSION

PTS is self limiting neuritis of unknown etiology affecting the brachial plexus.¹ It was first reported in 1943 and was considered a separate entity after Parsonage and Turner described a series of 136 cases in 1948.^{1,2} Since then PTS is identified by various names like brachial neuritis, neuralgic amyotrophy, idiopathic brachial neuritis, brachial plexus neuropathy, paralytic

brachial neuritis, and acute brachial radiculitis.³

Estimated incidence is about 1.64 per 100 000 in the general population⁴. Although, It can affect any age group, PTS is most commonly seen between the third and seventh decade of life with male preponderance.⁴ It is thought to be due to autoimmune process secondary to viral infection or to a vaccine.⁴ Nearly one third of the patients may presents with bilateral symptoms either by simultaneous or sequential involvement.⁵

Although, any trunk can be affected by PTS, the suprascapular nerve, axillary nerve and long thoracic nerve are commonly involved.^{3,4} In typical cases, patient initially complaints of severe pain which gradually subsides over period of few days to weeks. Later, weakness and atrophy of the muscle supplied by affected nerve is observed due to denervation.^{3,6} If the phrenic nerve is involved patient may present with dyspneas.⁷ In majority of the cases, it resolves within two years and recurrence is known to occur.³

The role of MRI in PTS to rule out other causes of shoulder pain like cervical disc protrusion, mass lesions in brachial plexus, rotator cuff tear, impingement syndrome, or labral tear. Apart from excluding the structural abnormalities, MRI can show the secondary changes in muscle due to denervation⁴. The distribution of involvement gives clue to nerve involved. For example, in our case, supraspinatus and infraspinatus muscle abnormality is suggestive of supraclavicular nerve involvement.

MRI finding in parsonage turners syndrome depends on stage of the disease.⁴ In acute stage of denervation, signal intensity may vary from normal to diffuse increase in signal intensity due to edema. In sub acute stage atrophy is seen with persisting edema. The atrophy of muscle manifests in MRI as decrease in muscle volume with an increase in intramuscular linear T1 hyperintensity (fatty infiltration). In chronic phase, muscle may revert back to normal signal. PTS may be distinguished from quadrilateral syndrome by isolated involvement of teres major muscle in the latter condition.

For patients with unknown cause of shoulder pain, it is important to screen both the shoulder muscles with large FOV. Radiologist may be the first to suggest diagnosis of PTS after ruling out the structural causes of shoulder pain. Management of PTS is conservative treatment with analgesia and physiotherapy.^{3,4}

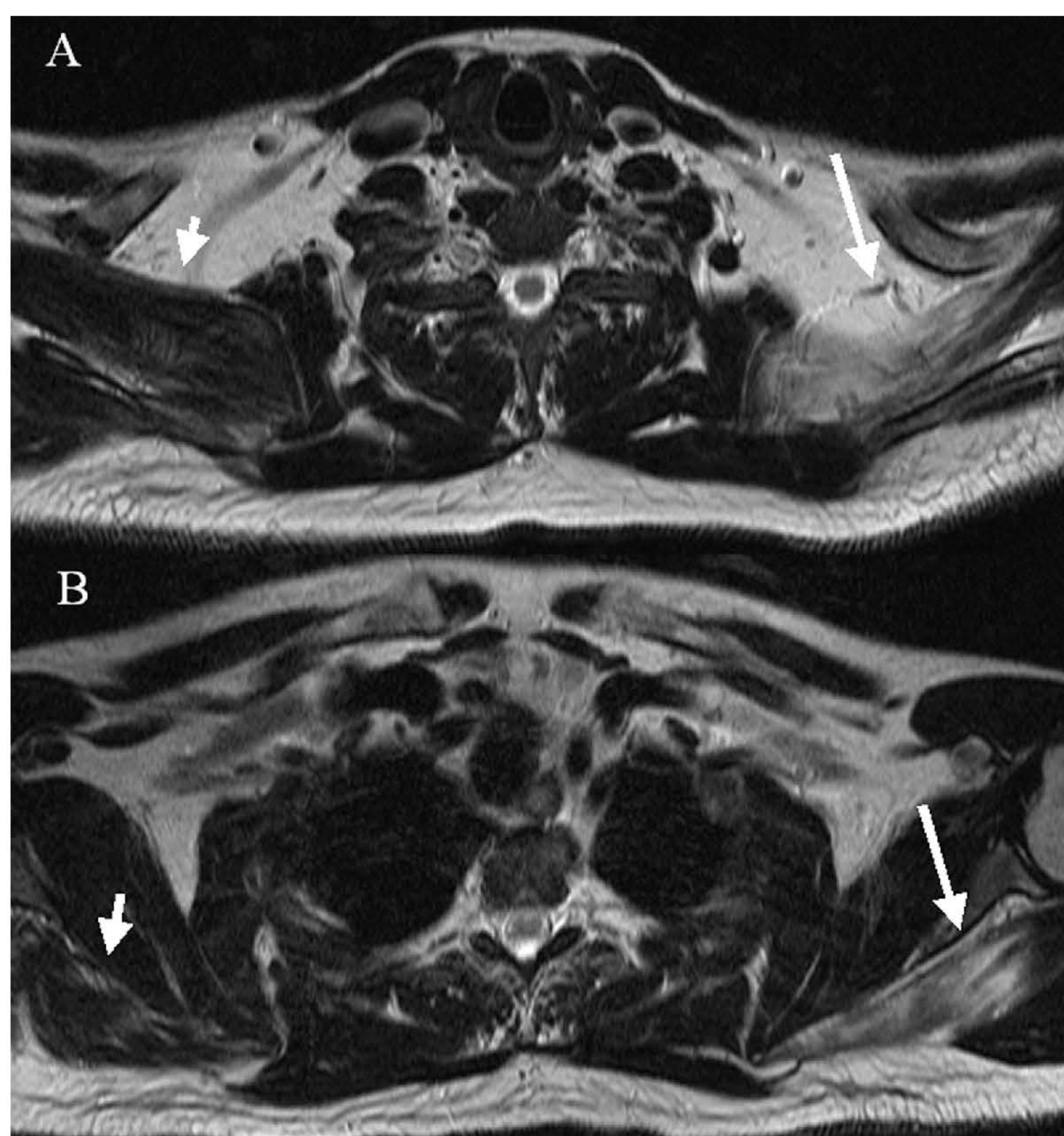


Figure 2. Axial post-contrast T1 weighted images showing enhancement of left supraspinatus (arrow in A) and infraspinatus muscle (arrow in B). No enhancement is seen on muscle around right shoulder.

CONCLUSION

Parsonage- Turner syndrome is a self-limiting disease affecting the brachial plexus. The group of muscles involved on MRI can give clue to the nerve affected. MRI is useful adjunct investigation to electrophysiological testing for the diagnosis of PTS.

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