

## Parsonage-Turner Syndrome -- Report Of Two Clinical Cases And Literature Review

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### ABSTRACT

**INTRODUCTION:** Parsonage-Turner syndrome is characterized by pain and flaccid paralysis of the muscles around the shoulder girdle. The etiology of this disease is multifactorial and its pathophysiologic mechanism is unknown. The recommended treatment consists in analgesic drugs and intense physical therapy. This syndrome is usually self-limited but the symptoms can persist for a few years.

**CLINICAL CASES:** The authors present two cases of Parsonage-Turner syndrome: symptomatology, diagnostic examination, treatment and follow-up results.

**DISCUSSION:** Parsonage-Turner syndrome is a rare diagnosis but orthopaedic surgeons must be aware of it to include it in the shoulder or upper arm pain differential diagnosis.

**Key words:** Parsonage-Turner Syndrome; Shoulder; Neuralgic Amyotrophy; Shoulder-girdle Syndrome

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### INTRODUCTION

Parsonage-Turner syndrome (PT) was described in 1948 by M. J. Parsonage and J. W. Turner and named neuralgic amyotrophy/shoulder-girdle syndrome. This condition comprised pain and flaccid paralysis of the muscles around the shoulder girdle<sup>[1]</sup>.

This condition, also known by brachial plexus neuropathy<sup>[2]</sup>, is characterized by a sudden shoulder or upper arm pain that worsens within few hours or days, followed by motor weakness involving multiple nerves, commonly long thoracic, suprascapular and anterior interosseous nerves. Patients also feel paresthesias in axillar, superficial radial and lateral antebrachial cutaneous nerves regions<sup>[2]</sup>. The pain may last for several weeks and is resistant to conventional analgesic treatment<sup>[2]</sup>.

The pathophysiologic mechanism of the disease is unknown and the literature points a multifactorial cause, involving mechanical, traumatic, infectious, immune, genetic and environmental factors<sup>[2,3]</sup>.

There is no specific treatment for this pathology, but an aggressive analgesic treatment and an intensive physical therapy program are recommended in these cases. Prednisolone use shows some good results in isolated case reports but it lacks scientific confirmation<sup>[2,4]</sup>.

This syndrome is usually a self-limited syndrome with nearly complete recovery at the end of few years, although some patients experience chronic pain and paresis<sup>[3,4,5]</sup>.

### CLINICAL CASE 1

A 27 years old male presented cervical and left upper arm neuropathic pain associated with arm paresis, without apparent cause.

On physical examination, he was unable to abduct and flex his shoulder and there were signs of supraspinatus and infraspinatus atrophy (Figure 1).

Fatty atrophy of supraspinatus and infraspinatus muscles

was present on magnetic resonance imaging (MRI) and the electromyography (EMG) showed abnormal motor function.

The treatment consisted in pain management and physical therapy with full recovery of shoulder range of motion and motor strength.

## CLINICAL CASE 2

A 46 years old male was involved in a motor vehicle accident and suffered right shoulder trauma. He presented in emergency room with severe shoulder pain and range of motion limitation. Neer, Hawkins and Drop-arm tests were positive and we suspected of massive rotator cuff tear.

In outpatient follow-up the patient presented an even more diminished shoulder motor function, deltoid muscle atrophy and parestesias in axillar nerve territory (Figures 2 and 3). The ultrasound exam showed no evidence of rotator cuff tear.

Shoulder MRI revealed edema of the supraspinatus, infraspinatus and deltoid muscles. Brachial plexus MRI showed trunks, divisions and cords edema without compression or rupture.

One month EMG showed brachial plexus trunks severe denervation with axonal lost. Ten month later EMG revealed superior and middle trunks reinnervation.

Patient started intensive physical therapy one month after the accident.

Currently, one year and a half follow-up, patient has recovered shoulder mobility but still have diminished upper arm muscle strenght.

## DISCUSSION

Parsonage-Turner Syndrome is a peripheral neuropathy that causes severe upper arm pain, multifocal paresis and sensory loss<sup>[3]</sup>. This condition affects 1 to 3/100000 patients per year and is more common in men, with a 2:1 ratio<sup>[2]</sup>. This condition affects people of all ages, with a peak at 40 years old<sup>[2]</sup>.

The diagnosis of this syndrome is difficult and it is frequently misdiagnosed as a cuff rotator tear, gleno-humeral bursitis or a muscle strain<sup>[2,6]</sup>. Pain, paresis and sensory symptoms represent different nerve territories, and this atypical distribution can point this diagnosis<sup>[2]</sup>. Another diagnosis clue is to observe shoulder wing movement during a slow abduction-anterior elevation maneuver, caused by long thoracic nerve involvement<sup>[2,3]</sup>. Clinical case 2 patient was first misdiagnosed with rotator cuff tear.

A minority of patients presents with different phenotypes (mononeuropathic, pure sensory, lumbosacral, painless), and there is also an hereditary form<sup>[2,3]</sup>. Both our patients presented with typical classical form symptoms.

EMG is the most useful diagnostic exam, which could show signs of denervation and lost of motor units<sup>[4]</sup>. MRI of the brachial plexus, shoulder and upper arm may reveal T2 high signal of the affected muscles but is rarely necessary for the diagnosis<sup>[7]</sup>. New MRI sequences like magnetic resonance neurography, 3D STIR and TIRM can assess nerve inflammation and muscle denervation and help early diagnosis<sup>[8]</sup>. In both clinical cases, EMG and MRI were positive and helped the diagnosis.

EMG can be useful to evaluate disease evolution and prognosis. Most patients present initial reinnervation is seen at 5.8 months and near full reinnervation at 9.5 months<sup>[9]</sup>. Patient 2 showed reinnervation signs at 10 months follow-up.

Both our patients were treated with physical therapy and analgesic drugs, with full recovery of shoulder range of motion. One of the patients present residual motor strength deficit but he has no pain or sensory loss.



Figure 1 Supraspinatus and infraspinatus atrophy.



Figure 2 Shoulder diminished range of motion.



Figure 3 Deltoid atrophy.

Orthopaedic surgeons must be aware of this syndrome to include it in the shoulder or upper arm pain differential diagnosis<sup>[6]</sup>.

## REFERENCES

1. Parsonage MJ, Aldren Turner JW. Neuralgic Amyotrophy - The Shoulder-Griddle Syndrome. *The Lancet*. 1948; **1(6513)**: 973-8.

- [PMID: 18866299]; [DOI: 10.1016/s0140-6736(48)90611-4]
2. Van Eijk JJ, Groothuis JT, Van Alfen N. Neuralgic Amyotrophy: an update on diagnosis, pathophysiology, and treatment. *Muscle Nerve*. 2016; **53**(3): 337-50. [PMID: 26662794]; [DOI: 10.1002/mus.25008]
  3. Nens van Alfen. Clinical and pathophysiological concepts of neuralgic amyotrophy. *Nat Rev Neurol*. 2011; 10;7(6): 315-22. [PMID: 21556032]; [DOI: 10.1038/nrneurol.2011.62]
  4. Darby MJ, Wass AR, Fodden DI. Neuralgic amyotrophy presenting to na accident and emergency department. *J Accid Emerg Med*. 1997; **14**(1): 41-43. [PMID: 9023624]; [DOI: 10.1136/emj.14.1.41]
  5. Monteiro E, Torres J, Gutierrez M, Silva S, Pinto RP. An unusual cause of shoulder pain and dysfunction of the shoulder girdle: Parsonage-Turner syndrome - case report. *Eur Orthop Traumatol*. 2013; [DOI: 10.1007/s12570-013-0170-x]
  6. Misamore GW, Lehman DE. Parsonage-Turner Syndrome (Acute Brachial Neuritis). *J Bone Joint Surg Am*. 1996; **78**(9): 1405-8. [PMID: 8816689]; [DOI: 10.2106/00004623-199609000-00018]
  7. Schreiber AL, Abramov R, Fried GW, Herbison GJ. Expanding the Differential of Shoulder Pain: Parsonage-Turner Syndrome. *J Am Osteopath Assoc*. 2009; **109**(8): 415-22. [PMID: 19706831]
  8. Zara G, Gasparotti R, Manara R. MR imaging of peripheral nervous system involvement: Parsonage-Turner Syndrome. *J Neurol Sci*. 2012; **315**(1-2). [PMID: 22115632]; [DOI: 10.1016/j.jns.2011.11.020]
  9. Feinberg JH, Nguyen ET, Boachie-Adjei K, Gribbin C, Lee SK, Daluiski A, Wolfe SW. The Electrodiagnostic Natural History of Parsonage-Turner Syndrome. *Muscle Nerve*. 2017; **56**(4): 737-743. [PMID: 28044362]; [DOI: 10.1002/mus.25558]