

Case report

Parsonage-Turner syndrome in a patient with bilateral shoulder pain: A case report

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Abstract

Objective: Parsonage-Turner syndrome is a peripheral neuropathy characterized by acute onset shoulder pain, myalgia, and sensory disturbances. The present report discusses a rare case of Parsonage-Turner syndrome and highlights the importance of accurate history recording and thorough physical examination for the diagnosis of the disease in rural areas.

Patient: A 28-year-old woman presented to our clinic with acute bilateral shoulder pain and difficulty moving her right arm. A diagnosis of Parsonage-Turner syndrome was suspected based on the progression of symptoms, severity of pain, and lack of musculoskeletal inflammation. The diagnosis was confirmed by neurological specialists, and the patient was treated with methylprednisolone, after which her symptoms gradually improved.

Discussion: The differential diagnosis of shoulder pain is complicated due to the wide variety of conditions sharing similar symptoms. Accurate history recording and thorough physical examination are required to differentiate among conditions involving the central nerves, peripheral nerves, and nerve plexuses.

Conclusion: Although the symptoms of Parsonage-Turner syndrome vary based on disease progression and the location of impairment, proper diagnosis of acute shoulder pain without central neurological symptoms can be achieved in rural areas via thorough examination.

Key words: Parsonage-Turner syndrome, shoulder pain, rural medicine

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Introduction

Parsonage-Turner syndrome is a peripheral neuropathy characterized by acute onset shoulder pain, myalgia, and sensory disturbances. Also known as acute brachial neuropathy, Parsonage-Turner syndrome is often accompanied by impairments of the suprascapular and axillar nerves¹. Men are more likely to be affected than women (male:female range; 9 to 11.5:1), and initial symptoms are typically unilateral, although some evidence indicates that initial symptoms may arise from bilateral regions in rare cases^{2, 3}. The estimated prevalence of Parsonage-Turner syndrome is approximately 1.64 per 100,000. However, the differential diagnosis of shoulder pain is broad, indicating that these estimates may be lower than the true prevalence of the condition⁴. Diagnosis is further complicated by the heterogeneity of symptoms among patients, which vary according to the nerves injured and the speed at which the disease progresses⁴. Therefore, a comprehensive approach involving accurate history taking, physical examination, and specific tests (e.g., electromyography and brachial plexus magnetic resonance imaging [MRI]) is required to ensure proper diagnosis, while delay of diagnosis and treatment may result in lasting functional damage⁵. In the present report, we discuss the case of a young woman with bilateral shoulder pain who received a final diagnosis of Parsonage-Turner syndrome, focusing on the perspective required for diagnosis of the disease in rural areas.

Patient

A 28-year-old woman presented to our remote island clinic in Okinawa with acute bilateral shoulder pain and difficulty moving her right arm. The patient reported the pain as dull and continuous without any history of preceding infection or trauma. She reported being unable to perform housework or care for her child because of pain. Examina-

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Twelve cranial nerves: Normal		Deep tendon reflex	Normal
MMT (right/left)		Sensory	Hypoesthesia in the C5 area of right shoulder (solid line)
Neck flexion/extension	5/5		
Shoulder			
Forward extension	3/5		
Backward extension	4/5		
Adduction	3/5		
Abduction	4/5		
External rotation	2/5		
Internal rotation	5/5		
Biceps	5/5		
Triceps	5/5		
Hand	5/5		
Lower-extremity muscles	5/5		

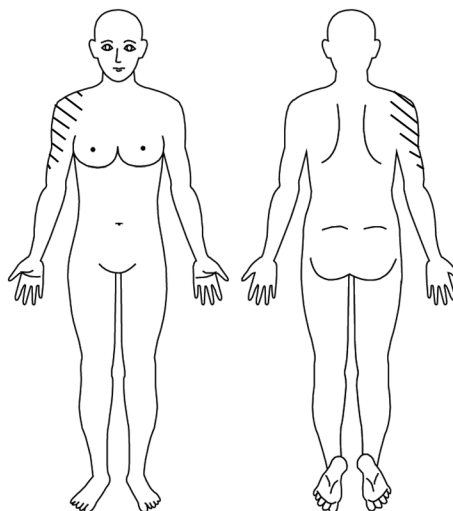


Figure 1 Results of initial neurological examination.

tion revealed a temperature of 36.2°C, blood pressure of 123/60 mm Hg, pulse of 75 beats per minute, and respiratory rate of 14 breaths per minute. The patient was alert and fully oriented, with no apparent disturbances in consciousness. On inspection, she had right deltoid muscular atrophy. A manual muscular test revealed weakness of right shoulder extension, flexion, external rotation, internal rotation, and abduction without muscle tenderness (Figure 1). Sensory loss was noted in the lateral portion of the right shoulder. The remainder of the examination was normal. Neck x-ray and blood tests were negative for osteoarthritis and any abnormality indicative of autoimmune disease (Table 1).

The patient was referred to a hospital specializing in orthopedics and neurosurgery, where no abnormalities of the brain, neck, chest or shoulders were observed on MR images. A diagnosis of Parsonage-Turner syndrome was suspected based on the progression of symptoms, severity of pain, and lack of musculoskeletal inflammation. The patient was prescribed pregabalin for pain control and referred to a neurologist at another hospital. Cervical MRI (short T1 inversion recovery [STIR] images) revealed high intensity areas and swelling in the right suprascapular and right axillary nerves, as well as areas of high intensity in the right supraspinatus, infraspinatus, and teres minor muscles (Figure 2). Similar changes were observed for the left suprascapular nerve, supraspinatus muscle, and infraspinatus muscle, sug-

gesting bilateral brachial plexus neuritis (Figure 2). Electromyography revealed denervation of the right supraspinatus and left supraspinatus muscles. The patient was diagnosed with bilateral brachial plexus neuritis (Parsonage-Turner syndrome) and treated with methylprednisolone, after which her symptoms gradually improved.

Discussion

The onset of Parsonage-Turner syndrome is typically unilateral, and the clinical course may be either acute or chronic¹⁾. However, this patient presented with rare bilateral symptoms²⁾, which can further complicate the differential diagnosis of the condition. Previous reports have indicated that inflammation associated with Parsonage-Turner syndrome can result in muscle weakness and atrophy^{6, 7)}. Therefore, the patient's muscular atrophy may have been due to neurogenic damage, based on the inflammation of the right brachial plexus and muscular denervation observed on MRI and electromyography. Typically, neurogenic muscular atrophy develops distally, while myogenic atrophy develops proximally⁸⁾. However, the patient of the present case experienced atrophy mainly around the shoulder, further complicating the diagnosis of her pain and weakness.

In addition, the patient's symptoms can be associated with a wide variety of conditions. Accurate diagnosis of

Table 1 Laboratory data

WBC	4190/ μ L	HBs antigen	(-)	Spinal fluid	
Hb	11.2 g/dL	HCV antibody	(-)	pressure	100 mmH ₂ O
Plt	18.1×10^4 / μ L	Anti-HTLV-1 antibody	(-)	Color	clear
TP	6.8 g/dL	RPR	(-)	Cell	1/ μ L
Alb	4.2 g/dL	TPHA	(-)	protein	35.8 mg/dL
AST	18 IU/L	ESR (at an hour)	12 mm	Glucose	61 mg/dL
ALT	19 IU/L	TSH	1.156 μ IU/mL	Urine	
LDH	253 IU/L	FT4	1.03 ng/dL	pH	7
CK	57 IU/L	ANA	(-)	Protein	(-)
BUN	9.3 mg/dL	Anti-SS-A antibody	(-)	Sugar	(-)
Cre	0.59 mg/dL	Cardiolipin antibody	(-)	Ketone	(-)
Na	140 mEq/L	PR3-ANCA/MPO-ANCA	(-)	Blood	(-)
K	3.8 mEq/L	VitB1	25 ng/mL		
Cl	105 mEq/L	VitB12	411 pg/mL		
CRP	0.09 mg/dL	Folate	4.6 ng/mL		
Glu	112 mg/dL				



Figure 2 Short T1 inversion recovery (STIR) magnetic resonance imaging (MRI) of the brachial plexus. Areas of high signal intensity can be observed on the bilateral supraspinatus and infraspinatus muscles (arrow head), as well as the bilateral brachial plexus (arrow).

the patient's shoulder pain was made by visits to multiple specialists in orthopedic, neurosurgery, and neurology. Although shoulder pain is mainly caused by musculoskeletal diseases⁹⁾, similar pain may also arise from dermatologic, cardiovascular, and diaphragmatic diseases¹⁰⁾. In the present case, the patient's pain was caused by inflammation of the brachial plexus, which is comprised of peripheral nerves from the cervical and thoracic spinal cord. Neurogenic pain in shoulders originates from the spinal cord, spinal nerve

roots, and peripheral nerves. Although diseases of the spinal cord can usually be differentiated from one another via assessment of tendon reflexes¹¹⁾, diseases involving the spinal cord roots and peripheral nerves require additional assessment of sensory loss and motor disturbances¹²⁾.

In the present case, the patient exhibited muscular weakness when performing all motions of the right shoulder. Our findings indicated that the distribution of affected nerves involved several spinal cord roots, suggesting damage to the

nerve plexus. Physicians in rural areas may be unable to perform specialized examinations involving MRI and electromyography. However, proper utilization of knowledge and skills (e.g., accurate history taking and thorough physical examination) can lead to the appropriate diagnosis, as in the present case.

Conclusion

In the present report, we discussed the case of a young woman diagnosed with Parsonage-Turner syndrome after presenting with acute bilateral shoulder pain and right shoulder weakness. Our findings suggest that Parsonage-Turner syndrome should be included in the differential diagnosis of acute shoulder pain. Such diagnosis requires accurate history taking and thorough physical examination based on an understanding of the pathophysiology of various neurogenic diseases, especially in rural areas that may not have access to advanced imaging equipment.

Conflict of Interest: The authors declare that they have no competing interests.

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