

Case report



## PAINLESS NEURALGIC AMYOTROPHY (PARSONAGE-TURNER SYNDROME) – A CASE REPORT

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### ABSTRACT:

**Background:** Neuralgic amyotrophy (NA) is a rare disorder typically characterized by an abrupt onset of upper extremity pain followed by progressive muscle weakness, atrophy and occasional sensory loss. Although NA has been hypothesized to be an autoimmune-mediated disorder. It is considered a primarily clinical diagnosis, electrodiagnostic evaluation is essential for the diagnosis confirmation and can exclude other etiologies. Electrodiagnostic findings can reveal patchy damage to any nerve within the brachial plexus.

**Case Description:** In the current case report, we are presenting a 43-years-old man admitted to the Neurology Department of “UMHAT Dr. Georgi Stranski” in Pleven, Bulgaria, with decreased muscle strength and limited active movements in the left upper shoulder for approximately 3 weeks. The patient denied feeling any pain during the onset and afterwards. He had no previous infections, vaccinations and history of other diseases. The detailed neurological examination showed the left upper extremity decreased antigravity strength in the deltoid and infraspinatus muscles with marked atrophy of the same. Hyporeflexia of the left biceps and brachioradialis deep tendon reflexes was present. Electromyography findings showed denervation of the deltoid and infraspinatus muscles. Initial reinnervation of supraspinatus and cervical paraspinal muscles was present. The diagnosis of NA was confirmed by both the neurological examination and the electrophysiological findings.

**Conclusion:** We are presenting a clinical case of idiopathic neuralgic amyotrophy with atypical painless presentation and discussing the most significant aspects of the disorder with regards to the difficulties in approaching the correct diagnosis. A better understanding of the NA clinical symptoms and signs variability improves the diagnostic and therapeutic approach.

**Keywords:** Neuralgic amyotrophy, Personage-Turner syndrome, painless,

### BACKGROUND

Neuralgic amyotrophy (NA), also known as Parsonage–Turner syndrome (PTS) and idiopathic brachial neuritis, is a rare disorder typically characterized by an abrupt onset of upper extremity pain followed by progressive muscle weakness, atrophy and occasionally sensory loss. Although PTS has been hypothesized to be an autoimmune-mediated disorder, its etiology is still unknown. NA is considered a primarily clinical diagnosis, electrodiagnostic evaluation is essential for the diagnosis confirmation and can exclude other etiologies. [1, 2, 3, 4] Electrodiagnostic findings can reveal patchy damage to any nerve within the brachial plexus. NA is often misdiagnosed as cervical radiculopathy, spinal cord compression, adhesive capsulitis, rotator cuff impingement, labral tear, glenohumeral osteoarthritis, malignancy and even amyotrophic lateral sclerosis. [5]

### CASE DESCRIPTION

We present a 43-year-old man, admitted to the Neurology Department of “UMHAT Dr. Georgi Stranski” Pleven, with decreased muscle strength and limited active movements in the left upper shoulder for about 3 weeks. He reported that his complaints started the following morning after heavy physical activity related to his job. The patient denied any feeling of pain at the onset and afterwards. He had no previous infections, vaccination and history of other diseases. The detailed neurological examination showed that the left upper extremity decreased antigravity strength (2/5) in the deltoid and infraspinatus muscles with marked atrophy of the same. Hyporeflexia of the left biceps and brachioradialis deep tendon reflexes was present. The left arm exteroceptive sensation was normal. Normal strength, sensation, and reflexes were present in the right upper extremity without increased tone, fasciculations, or atrophy. Provocative tests for radiculopathy, musculoskeletal shoulder pathology, and peripheral nerve entrapment were negative. The initial laboratory workup was completely unremarkable. (image 1) (image 2) Photos of the patient show limited movements of the left arm and atrophy of the left deltoid and infraspinatus muscles. (image

3) A native CT image of the cervical spine shows mild degenerative changes and right-sided disc prolapse at C5-C6 level without left foraminal narrowing. The radiographic study of the left shoulder was normal. (table 1)

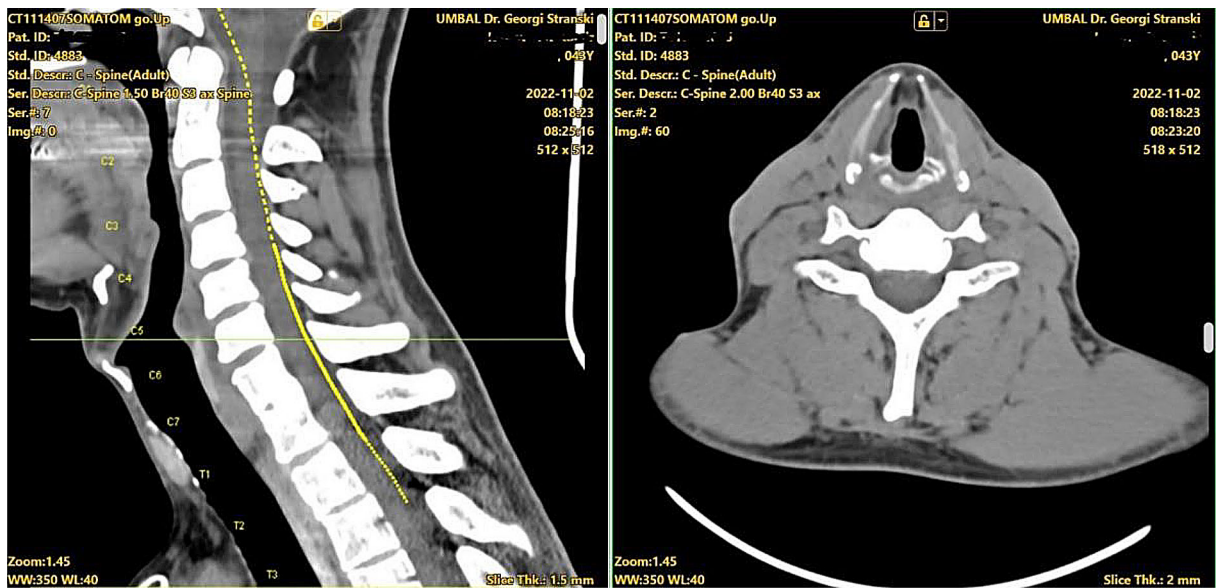
**Image 1.** A photo of the patient is showing an atrophy of the left deltoid and infraspinatus muscles



**Image 2.** A photo of the patient is showing limited movements of the left arm.



**Image 3.** A native CT image of the cervical spine of the patient



**Table 1.** Electrodiagnostic evaluation of the left upper extremity.

Nerve conduction study				
Motor nerve	Onset latency (ms)	Amplitude (mV)	Segment	Velocity (m/s)
Median	Wrist 4.6	6.4	Wrist to APB	
	Elbow 8.1	6.1	Elbow to wrist	62.5
Ulnar	Wrist 3.4	11.8	Wrist to ADM	
	Elbow 7.6	10	Elbow to wrist	56.5

Needle electromyography							
Muscle	Nerve	Root	Insertional Activity	MUAB duration	MUAB amplitude	Fibs and PSW	Recruitment pattern
Rhomboid major	Dorsal scapular	C4-C5	Normal	Normal	Normal	None	Normal
Cervical paraspinals	Posterior primary rami	C1-T1	Normal	Normal	Normal	None	Normal
Deltoid	Axillary	C5-C6	Normal	Normal	Normal	2+	Normal
Supraspinatus	Suprascapular	C5-C6	Normal	Normal	Normal	None	Normal
Infraspinatus	Suprascapular	C5-C6	Normal	Normal	Normal	1+	Normal
Pectoralis major	Lateral and median pectoral	C5-Th1	Normal	Normal	Normal	None	Normal

Abbreviations: APB – abductor pollicis brevis; ADM – abductor digiti minimi; MUAP – motor unit action potential; PSW – positive sharp wave.

Electromyography (EMG) findings showed denervation of the deltoid and infraspinatus muscles. Initial reinnervation of supraspinatus and cervical paraspinal muscles was present. The diagnosis of Parsonage-Turner syndrome was confirmed by both the neurological examination and the electrophysiological findings. Low doses of corticosteroids were applied, and further kinesiological Treatment, including assisted passive and active mobility exercises, was performed with the aim of full functional recovery of the left upper limb. (image 4)

**DISCUSSION**

Neuralgic amyotrophy is a comparatively rare diagnosis in the neurological clinical practice. Unfortunately, it is often underdiagnosed due to the variety of similarly presenting disorders, such as cervical spondylosis, adhesive capsulitis, cervical radiculopathy, and acute calcific tendinitis. NA usually occurs after an inciting event, which may be exercise-induced, surgery, recent vaccinations or infections. The incidence of this syndrome is about two to three individuals per every 100,000 people, most commonly between the 3rd and 7th decades of life. Men are affected more often than women. Pain is usually the initial symptom in about 90% of the cases. [1, 6] According to

**Image 4.** A photo of the patient who is fully recovered after 2 months.



the literary data available, only a few cases with the clinical presentation of painless neuralgic amyotrophy after surgery or vaccination have been reported. [7, 8] Treatment is supportive, as there are currently no evidence based pharmacological or rehabilitation interventions. [8, 9, 10, 11]

In our patient, the initial signs were motor weakness and muscle atrophy, which progressed for about 3 weeks after the inciting event; actually, the lack of pain was the atypical manifestation of this syndrome.

The diagnosis of this condition involves adequate clinical examination supported by EMG confirmation. Other possible diagnoses with similar clinical presentation must be ruled out. Our patient's neurological examination was supported by the EMG findings that showed denervation in the left-sided deltoid and infraspinatus mus-

cles. The neuroimaging studies performed ruled out the pathology of the left arm. CT of the cervical spine showed disc prolapse at the C5-C6 on the right side, not corresponding with the clinical presentation.

## CONCLUSION

We present a clinical case of idiopathic neuralgic amyotrophy with atypical painless presentation and discuss the most significant aspects of the disorder in regard to the difficulties in approaching the correct diagnosis. The approach to diagnosis includes detailed medical history, neurological examination and EMG of the affected muscle groups. Better knowing of the NA clinical symptoms and signs variability improves the diagnostic and therapeutic approach.

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