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Painful shoulder – moving deltoid syndrome

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Painful legs, moving toes (PLMT) is characterized by leg pain and involuntary toe movements, bilateral or unilateral. Toe movements are continuous and continue during sleep.^{1–3} Painful arm, moving fingers syndrome is an analogous disorder of the upper extremity.⁴ Here we describe the clinical and electrophysiological observations of a patient presenting with history of shoulder pain and involuntary deltoid contractions, and propose the term “Painful shoulder – moving deltoid syndrome”.

A 62-year old man developed severe pain in his right shoulder 25 years previous to our seeing him. Onset was sudden with no identifiable trigger and was described as constant, aching, deep, and localized to the shoulder joint. Involuntary muscle contractions began in

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the right deltoid muscle two weeks after onset of pain. Contractions were rhythmic, with sinusoidal and undulating/peristaltic qualities. Both the pain and the deltoid contractions were continuous. The movements continued during sleep, and the patient could not voluntarily stop them.

Therapeutic interventions, including medications, physical therapy, and surgery, did not mitigate the pain nor affect the movements. Oral analgesics, including oxycodone, and antiepileptics, including phenytoin and gabapentin, all proved ineffective. The patient was treated by chiropractors and physical therapists with no benefit. In 2001, a shoulder spur was removed, and later that year an anterior cervical discectomy with fusion at three levels (C4–C5, C5–C6, and C6–C7) was performed. Neither surgery produced benefit.

On exam the patient had no focal motor or sensory deficits. Tendon reflexes were normal. Involuntary movements in the right deltoid were constant, although the amplitude, frequency, and extent of contractions varied. Contraction “waves” were rhythmic and began in the posterior deltoid, swept anteriorly, and gave an “undulating” or peristalsis-like appearance. Contraction progression involved more muscle fascicles in the posterior middle-deltoid and was more visible with large amplitude contractions (see video supplement). His multiple spine magnetic resonance images revealed progressively worsening cervical spondylosis.

Multi-channel needle electromyographic (EMG) recording was performed with concentric needle electrodes. Deltoid EMG did not show myokymia or myoclonus. EMG activity underlying the contractions were normal-appearing interference patterns with bursts lasting 400–800 ms. During voluntary shoulder abduction, the bursting temporarily disappeared and was replaced by normal-looking tonic EMG activity. There were no other EMG abnormalities in the upper extremities.

The pathophysiology of PLMT is poorly understood and likely heterogeneous. In some cases there is evidence of a lesion in the spinal cord, the cauda equina, the lumbar roots or the peripheral nerves;²⁵ the syndrome may also occur after minor limb trauma or without any antecedents.⁵⁶ In at least one publication on PLMT, it was observed that movements could be suppressed at the patient’s volition.⁵ Peripheral nervous injury may produce a spectrum of movement disorders⁷ including PLMT, yet such etiology is not always confirmed by routine EMG, similar to our case. In the absence of confirmed peripheral nerve injury the pathophysiology of these symptoms remain uncertain, but likely arises from aberrant spinal cord plasticity. “Painful shoulder, – moving deltoid” syndrome represents a spinal segmental movement disorder possibly analogous to PLMT.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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REFERENCES

1. Spillane JD, Nathan PW, Kelly RE, Marsden CD. Painful legs and moving toes. *Brain*. 1971; 94(3): 541–556. [PubMed: 4255783]
2. Montagna P, Cirignotta F, Sacquegna T, Martinelli P, Ambrosetto G, Lugaresi E. "Painful legs and moving toes" associated with polyneuropathy. *J Neurol Neurosurg Psychiatry*. 1983; 46(5):399–403. [PubMed: 6101221]
3. Reich SG. Painful legs and moving toes. *Handb Clin Neurol*. 2011; 100:375–383. [PubMed: 21496596]
4. Verhagen WI, Horstink MW, Notermans SL. Painful arm and moving fingers. *J Neurol Neurosurg Psychiatry*. 1985; 48(4):384–385. [PubMed: 3998744]
5. Dressler D, Thompson PD, Gledhill RF, Marsden CD. The syndrome of painful legs and moving toes. *Mov Disord*. 1994; 9(1):13–21. [PubMed: 7511213]
6. Schott GD. "Painful legs and moving toes": the role of trauma. *J Neurol Neurosurg Psychiatry*. 1981; 44(4):344–346. [PubMed: 6113273]
7. Aggarwal A, Thompson PD. Unusual focal dyskinesias. *Handb Clin Neurol*. 2011; 100:617–628. [PubMed: 21496611]