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A Soldier with Lateral Antebrachial Cutaneous Neuropathy: Malingering or Fact?

Lateral Antebrakial Kutanöz Nöropatili Bir Asker: Temaruz ya da Gerçek?

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Summary

Introduction: Compression of the lateral antebrachial cutaneous nerve (LACN) is a rarely recognized but clearly definable syndrome. It should be taken into account in the differential diagnosis in the context of soldiers who are suspected of avoiding military duties by assuming the sick role. In this report, we describe a 23-year-old soldier who presented with avoidance of elbow extension due to a burning pain in the right forearm induced by extension. LACN neuropathy, which occurred after physical training including palm-away pull ups in the military camp and was initially suspected to be malingering, was later diagnosed according to the clinical and electrodiagnostic findings. People who are accused of malingering in military settings should be examined carefully also concerning the training-related injuries of the peripheral nervous and musculoskeletal systems. Especially for patients complaining of forearm pain that leads to inability to extend the elbow, LACN neuropathy should be considered in the differential diagnosis and confirmed by electrophysiological examination. *Turk J Phys Med Rehab 2010;56:145-7.*

Key Words: Lateral antebrachial cutaneous nerve, neuropathy, malingering

Özet

Giriş: Lateral antebrakial kutanöz sinir (LAKS) kompresyonu nadiren akla gelen ancak açıklıkla tanımlanabilen bir sendromdur. Bu sendrom, hasta rolü yaparak askeri görevlerinden kaçınabilecek askerlerde ayırıcı tanıda göz önünde bulundurulmalıdır. Bu vakada dirsek ekstansiyonunun ortaya çıkardığı sağ önkola yayılan yanıcı ağrı nedeniyle dirsek ekstansiyonundan kaçınma şikayeti ile başvuran 23 yaşında bir askeri tanımladık. LAKS nöropatisi, askeri bir kampta avuç karşıya bakarken kendini yukarı çekmeyi içeren fiziksel aktivite ile ortaya çıkmış ve ilk önce temaruz olduğu düşünülmüş daha sonra klinik ve elektrodiagnostik bulgularla tanısı konulmuştur. Askerlik görevi sırasında temaruz ile suçlanan kişiler, askeri eğitimleri ile ilişkili periferal nörolojik ve kas iskelet sistemi yaralanmaları açısından da dikkatli bir şekilde incelenmelidir. Özellikle ön kol ağrısı şikayeti olan ve bu nedenle dirsek ekstansiyonu yapamayan hastaların ayırıcı tanısında LAKS nöropatisi akılda tutulmalı ve elektrofizyolojik incelemelerle doğrulanmalıdır. *Türk Fiz Tıp Rehab Derg 2010;56:145-7.*

Anahtar Kelimeler: Lateral antebrakial kutanöz sinir, nöropati, temaruz

İntroduction

Compression of the lateral antebrachial cutaneous nerve (LACN) is a rarely recognized but clearly definable syndrome (1,2,3). It should be taken into account in the differential diagnosis in the context of soldiers who are suspected of avoiding military duties by assuming the sick role. This report describes the clinical and electrodiagnostic findings of a soldier who developed LACN neuropathy, after physical training including palm-away pull ups in the military camp.

Case

A 23-year-old, right-handed man (a soldier) presented with a burning pain in the radial half of the flexor surface of the right forearm between the elbow crease and the base of the right

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thumb increasing with elbow extension. The patient was followed in neurology outpatient clinic and hospitalized in orthopedic and cardiovascular surgery clinics within the past 2 months. The results of the upper extremity arterial and venous Doppler ultrasonography, plain X-ray, and electromyographic examination including ulnar, median, musculocutaneous and radial nerves were found to be within normal ranges. Therefore, initially we failed to differentiate the clinical pathology in the peripheral nervous and musculoskeletal system from fraud. The soldier was suspected of malingering to avoid military service.

Finally, he was referred to our physical medicine and rehabilitation department. Upon further detailed questioning, it was revealed that the symptoms started suddenly while he was practicing in the military camp. His complaints started with repeated resistance to the flexion and extension movements of the elbow, when the forearm was in pronation during suspension to the horizontal bar. He noted the sudden onset of 'electric-like shocks' in his right lateral forearm accompanied by paresthesia. His symptoms included a severe degree of pain in the right forearm and an inability to fully extend his elbow because of increased pain during elbow extension. His complaints have continued for a period of two months.

The patient's general physical examination was unremarkable. There was no atrophy, and bilateral upper extremity strength, range of motion, tone, and reflexes were normal. There was no evidence of trauma or trophic changes in his right arm and hand. On a careful examination, it was detected that he had a decreased sensation in the distribution of the right LACN. The differential diagnosis at this time included plexopathy, radiculopathy, peripheral neuropathy, and idiopathic (neuralgic) amyotrophy.

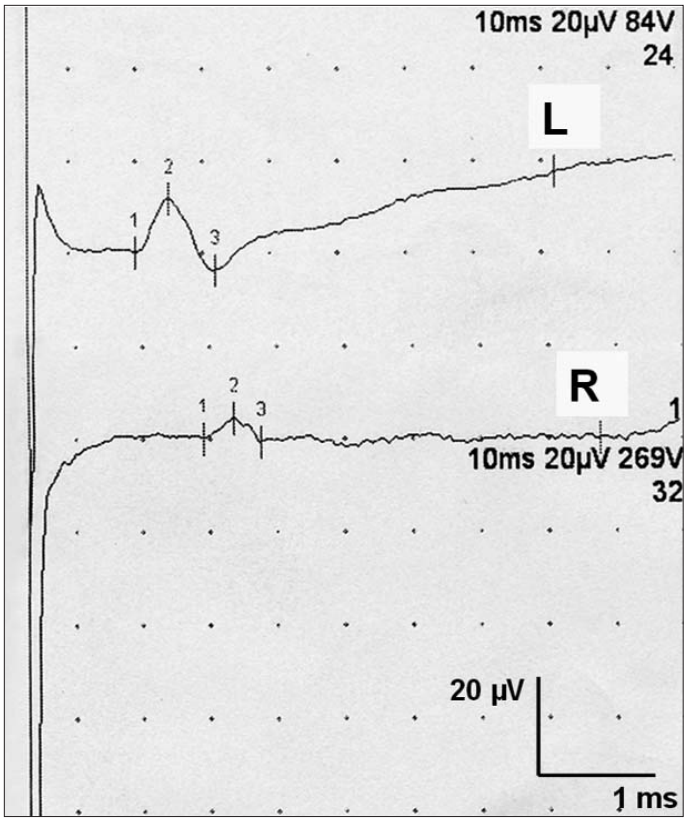

Figure 1. Entrapment of the LACN (Lateral Antebrachial Cutaneous Nerve).

We reviewed medical records and requested two additional investigations, magnetic resonance imaging (MRI) of the right elbow and sensory nerve conduction study of LACN, apart from the previous electromyographic examination of the upper extremity. MRI of the right elbow was normal. Electromyography revealed a prolonged distal latency (R: 3.35, L: 2.50 msec) and a 66% decrease in amplitude (R: 5.4, L:1 5.7 µV) in the right LACN when compared to the asymptomatic left arm (Figure 1). The surface recording electrode was placed over the nerve on the anterior forearm and the nerve was stimulated at the lateral border of the biceps brachii tendon in the cubital fossa. The right musculocutaneous, ulnar, median, radial nerve conduction studies and electromyography of multiple muscles of the right arm were normal. Entrapment of the right LACN was diagnosed.

Initial treatment included rest with splint and non-steroidal anti-inflammatory drugs (NSAID). He was started on a treatment course of physical therapy including whirlpool, hot pack, ultrasound, transcutaneous electrical nerve stimulation and massage on the right arm. At the reevaluation, which was done three weeks later, he continued to complain of persistent pain and paresthesia over the same region.

Three months after the onset of the symptoms, due to failure of conservative treatment and the persistence of symptoms, the patient underwent surgical exploration and LACN release under regional block anesthesia. The lateral edge of the biceps was exposed. The relationship of the nerve to the lateral margin of the biceps was evaluated. LACN was located

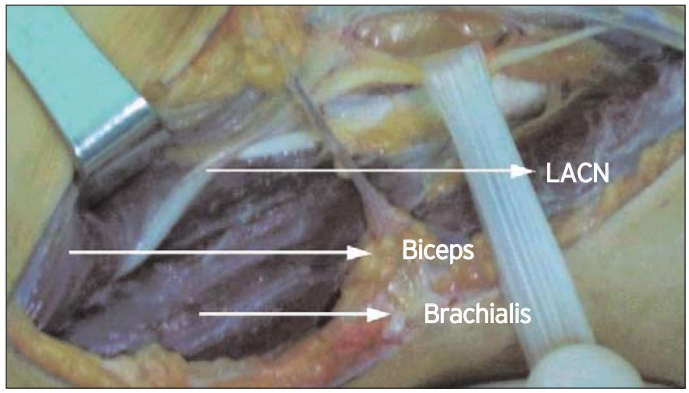

Figure 2. Entrapment of the LACN (Lateral Antebrachial Cutaneous Nerve).

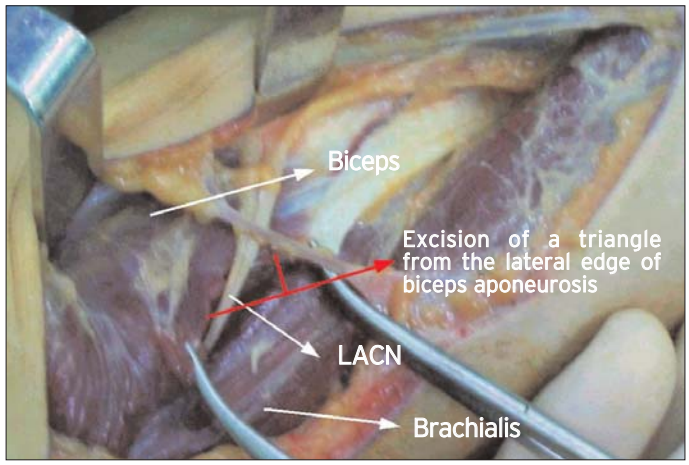

Figure 3. After partial resection of the lateral margin of the biceps tendon the LACN (Lateral Antebrachial Cutaneous Nerve) is free of any compression.

1.5-2 cm lateral to this tendon at the level of medial epicondyle (Figure 2). The nerve was compressed by the lateral margin of the biceps in supination. The nerve was released completely proximally and distally, then a triangular wedge of the biceps musculotendinous unit was excised (Figure 3). In addition, the deep antebrachial fascia was excised distally, therefore the nerve was decompressed adequately, which was confirmed by supinating and pronating the forearm intraoperatively.

The patient had immediate resolution of the pain in the elbow and sensation had returned to normal within a month. He regained a full range of motion of the elbow without pain. Four months postoperatively, he noted remarkable improvement in his symptoms, and electrodiagnostic studies revealed normal distal latency and amplitude in the right LACN. At 12 months follow-up, he was asymptomatic.

Discussion

Malingering is intentional production of false or exaggerated symptoms motivated by external incentives, such as obtaining compensation or drugs, avoiding work or military duty (4). Malingering presents special challenges to the practicing clinician, including diagnostic uncertainty, the confrontation of potentially criminal conduct (5). Malingering has long been recognized in the military. People who are accused of malingering in military settings should be examined carefully concerning the training-related injuries of the peripheral nervous and musculoskeletal systems. Although many nerve compression syndromes in the upper limb are common, some are rare, posing difficulties in both diagnosis and treatment (6). This report describes the clinical and electrodiagnostic findings of a patient who developed LACN neuropathy, after sustaining elbow flexion and extension during sports training in the military camp. This condition is probably underrecognized because the nerve is purely sensory and there is no motor abnormality.

The LACN is the terminal sensory branch of the musculocutaneous nerve. It innervates the volar, radial and dorsal aspects of the distal forearm and proximal wrist (6). Musculocutaneous neuropathy with weakness of the biceps muscle and a sensory deficit in the distribution of the LACN has been reported following prolonged repetitive forceful contracture of flexor musculature of the upper extremity (7,8). The same activities can also cause compression of the LACN at the point of exit lateral to biceps tendon (3,9). The horizontal bar exercises require forceful sustained contraction of the shoulder girdle, upper arm and forearm muscles to hold the bar against the force of the gravity and one's weight and lift up the weight against the gravity. Prolonged or repeated forceful flexion and extension of the upper extremity, or both, can cause compression of LACN as it exits laterally under the biceps tendon (9,10). Bassett (1) noted that the nerve is under more compression in pronation than in supination. In our case, holding the horizontal bar with arms in a repeatedly flexed-extended position in pronation with prolonged contraction of the biceps musculature most likely resulted in the compression of the LACN as it exits laterally from under the biceps tendon.

After diagnosing compression of LACN, many treatment options are available. Initially, conservative management is recommended. If conservative management fails, surgical decompression can be employed (3,11). Some patients respond to resting the arm and to curtailing the physical activities of the upper extremity; most would require an external device to fully rest the arm such as a posterior splint. Jablecki (9) described a LACN compression in a windsurfer caused by repetitive and forceful activities. Surgery was not necessary in his case, because the pain resolved quickly with rest and oral steroids. Davidson et al. (11) noted that of the 15 patients with LACN neuropathy they examined, four responded to the conservative treatment, eleven needed surgical decompression, and all patients who had decompression operation had no ongoing complaints. In our case also, in spite of the physical treatment applied for three weeks in addition to resting and NSAID, total recovery was not achieved. Therefore, decompression operation was needed. Surgical treatment described by Bassett consisted of release of the LACN at the elbow between the bicipital tendon and brachialis muscle, and wedge resection of the bicipital tendon (1). He treated his patients successfully not only by releasing the nerve between the bicipital tendon and brachialis muscle and triangular wedge resection of the bicipital tendon, but also by excision of the deep antebrachial fascia.

Most of the patients with LACN entrapment present with lateral elbow pain, but some may present with paresthesia along the volar radial aspect of the distal forearm (12). In Naam and Massoud's study (12), patients with LACN compression who complained of sensory dysfunction had less chance of improving with conservative treatment. In our case also, there was paresthesia in the radial forearm and no response was received from the conservative treatment in the initial evaluation, and thus, surgical intervention was required.

Soldiers who are accused of malingering should be investigated carefully concerning the training-related peripheral injuries of the nervous and musculoskeletal systems. Although forcing activity-related nerve injuries apparently occur infrequently, electromyographers and other related clinicians should be aware of this phenomenon, which is uncommon but of clinical and medico-legal importance. In patients with complaints of pain along the distal radial aspect of the forearm and inability of extension of elbow, LACN neuropathy should be considered in the differential diagnosis and electrophysiological examination should be performed.

References

1. Bassett FH 3rd, Nunley JA. Compression of the musculocutaneous nerve at the elbow. J Bone Joint Surg Am 1982;64:1050-2. [Abstract] / [PDF]
2. Patel MR, Bassini L, Magill R. Compression neuropathy of the lateral antebrachial cutaneous nerve. Orthopedics 1991;1:173-4.
3. Felsenthal G, Mondell DL, Reischer MA, Mack RH. Forearm pain secondary to compression syndrome of the lateral cutaneous nerve of the forearm. Arch Phys Med Rehabil 1984;65:139-41. [Abstract]
4. Malone RD, Lange CL. A clinical approach to the malingering patient. J Am Acad Psychoanal Dyn Psychiatry 2007;35:13-21. [Abstract] / [PDF]
5. Voiss DV. Occupational injury. Fact, fantasy, or fraud? Neurol Clin 1995;13:431-46.
6. Dailiana ZH, Roulot E, Le Viet D. Surgical treatment of compression of the lateral antebrachial cutaneous nerve. J Bone Joint Surg Br 2000;82:420-3. [Abstract] / [PDF]
7. Braddom RL, Wolfe C. Musculocutaneous nerve injury after heavy exercise. Arch Phys Med Rehabil 1978;59:290-3. [Abstract]
8. Yilmaz C, Eskandari MM, Colak M. Traumatic musculocutaneous neuropathy: a case report. Arch Orthop Trauma Surg 2005; 125:414-6. [Abstract]
9. Jablecki CK. Lateral antebrachial cutaneous neuropathy in a windsurfer. Muscle Nerve 1999;22:944-5. [Abstract] / [PDF]
10. Spindler HA, Felsenthal G. Sensory conduction in the musculocutaneous nerve. Arch Phys Med Rehabil 1978;59:20-3. [Abstract]
11. Davidson JJ, Bassett FH 3rd, Nunley JA 2nd. Musculocutaneous nerve entrapment revisited. J Shoulder Elbow Surg 1998;7:250-5. [Abstract]
12. Naam NH, Massoud HA. Painful entrapment of the lateral antebrachial cutaneous nerve at the elbow. J Hand Surg (Am) 2004;29:1148-53. [Abstract] / [Full Text] / [PDF]