Diagnosis and Treatment of Work-Related Ulnar Neuropathy at the Elbow

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KEYWORDS

• Ulnar neuropathy • Ulnar entrapment • Ulnar neuritis • Cubital tunnel syndrome • Repetitive strain injury

KEY POINTS

- Ulnar neuropathy at the elbow (UNE) is the second most common entrapment neuropathy after carpal tunnel syndrome (CTS). UNE occurs most commonly at the elbow due to mechanical forces that produce traction or ischemia to the nerve.
- Electrodiagnostic (EDX) studies can help to objectively locate, confirm, and quantify the severity of ulnar nerve compression.
- Management should include modification of activities that exacerbate symptoms, nighttime splinting, and/or padding the elbow to prevent direct compression. Surgical treatment should be considered if the condition does not improve despite conservative treatment and the condition interferes with work or activities of daily living.

INTRODUCTION

It is well known that work-related upper limb musculoskeletal disorders, particularly nerve entrapment, remain a difficult and costly problem in industrialized countries. Upper extremity entrapment neuropathies may be misdiagnosed as lateral or medial epicondylitis, de Quervain disease, among many others. Ulnar nerve entrapment occurs most commonly at the elbow due to mechanical forces that produce traction,

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Phys Med Rehabil Clin N Am 26 (2015) 513–522
http://dx.doi.org/10.1016/j.pmr.2015.04.002 **pmr.theclinics.com**
1047-9651/15/$ – see front matter

compression, or ischemia to the ulnar nerve. However, it may be misdiagnosed as CTS, radial tunnel syndrome, and cervicobrachial neuralgia. Despite the high frequency of work-related musculoskeletal disorders, the relation between work conditions and ulnar nerve entrapment at the elbow has not been the object of much research. Predictive factors associated with the onset of ulnar nerve entrapment at the elbow are not yet well delineated. Ulnar nerve entrapment at the elbow is typically associated with biomechanical risk factors (ie, holding a tool in position, repetitively).[1]

For the sake of clarity regarding nomenclature, ulnar neuropathy at the elbow is now considered the preferred term and is used in this article. Terms such as cubital tunnel syndrome or ulnar neuritis are still used by clinicians and may yet be seen in the literature. However, these terms are nonspecific descriptors often used interchangeably for any problem possibly relating to a nerve injury or entrapment near the elbow. After CTS, UNE is the second most common entrapment neuropathy.[1] A differential diagnosis for UNE includes cervical radiculopathy, brachial plexopathy, and compression of the ulnar nerve at the wrist.[1] Potential sites of UNE include Osborne ligament at the cubital tunnel, the arcade of Struthers (particularly after ulnar nerve transposition, when the nerve can be tethered), the medial intermuscular septum, the medial epicondyle, the flexor-pronator aponeurosis, and rarely an accessory muscle, the anconeus epitrochlearis.[2] Entrapment may also occur from soft-tissue structures such as tumors or ganglions, bony abnormalities due to fractures, osteophytes (bone spurs), or subluxation of the ulnar nerve over the medial epicondyle with elbow flexion. A tardy ulnar nerve palsy may be seen in association deformities of the elbow secondary to a supracondylar fracture of the humerus. This condition may occur when the ulnar nerve becomes entrapped by scar tissue, which may produce anterior displacement of the nerve with elbow flexion, which may then spontaneously reduce back into the ulnar nerve groove with elbow extension.[3] In general, work-relatedness and appropriate symptoms and objective signs must be present to establish a legitimate claim. EDX studies, including nerve conduction velocity (NCV) studies and needle electromyography (EMG), should be scheduled immediately to corroborate the clinical diagnosis.

ESTABLISHING WORK-RELATEDNESS

Work-related activities may also cause or contribute to the development of UNE. Establishing work-relatedness requires all of the following:

1. Exposure: Workplace activities that contribute to or cause UNE
2. Outcome: A diagnosis of UNE that meets the diagnostic criteria given in section Making The Diagnosis
3. Relationship: Generally accepted scientific evidence, which establishes on a more probable than not basis (greater than 50%) that the workplace activities (exposure) in an individual case contributed to the development or worsening of the condition (outcome)

Although the exact incidence and prevalence are uncertain, UNE is second only to CTS as the most common peripheral nerve entrapment. From 1995 to 2000, approximately 2800 claims for work-related UNE were reported to the Washington State Department of Labor and Industries.[4] Approximately one-quarter of these patients received surgical treatment, whereas the remainder was treated conservatively. Time loss payments were paid to 93% of the surgery group and 61% of the conservatively treated group.

Certain work-related activities have been associated with UNE, such as activities requiring repetitive or sudden elbow flexion or extension, intensive use of hand tools,