E-Poster

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MRI Findings of Ulnar Neuropathy at the Elbow Correlating With Common Entrapment Sites by Electrodiagnosis

Topic: Health Conditions (Nervous System, Musculoskeletal System, Cardiopulmonary System)

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BACKGROUND

Ulnar neuropathy at the elbow (UNE) is the second most common entrapment neuropathy of upper extremities, resulting in severely compromised function of the affected hand. Electromyography (EMG) is a useful study to define the precise entrapment site. However, little is known about the exact morphologic features using magnetic resonance imaging (MRI) in UNE. This retrospective study was designed to investigate the MRI findings of UNE correlating with EMG-proven common entrapment sites.

METHODS

Fifty-three patients with UNE confirmed by EMG including the inching technique were reviewed. Among them, MRI studies of the elbow were undertaken in 30 patients, in whom MRI findings at three common entrapment sites were analyzed by a radiologist. The entrapment site was defined as the most distal segment where a sharp decline of conduction velocity has occurred along the segment between below 6-cm and above 4-cm from medial epicondyle (ME) of humerus with 2-cm increment. Mean cross sectional area (CSA), relative signal intensity ratio (RSIR) of MRI was evaluated on axial fat-saturated T2-weighted image as well as total length of the lesion. In addition, the carrying angle of elbow was measured on plain radiographs.

RESULTS

The most common entrapment site was the segment between below elbow (BE) 2-cm~ME (n = 24, 45.28%, Elbow group), followed by BE 4-cm~BE 2-cm (n = 14, 26.42%, Distal group), and AE 2-cm~ME (n = 9, 16.98%, Proximal group). CSA (2.21 cm^2) and DSIR were largest at BE 2-cm~ME segment in all groups except that DSIR was highest at AE 2-cm~ME in Proximal group. Length of the lesion was longer in Proximal group (76.02 mm) than in Elbow (67.78 mm), and Distal (64.24 mm) groups. When UNE occurred in proximal to ME, adjacent muscles which are not innervated by the ulnar nerve also showed significant degeneration. Average carrying angle tended to increase in subjects who had more distal entrapment sites (Distal 15.41°, Elbow 11.80°, and Proximal 8.65°, p = 0.025), implicating a hypothesis that forward movement of the medial head of the triceps brachii muscle might result in forward sliding of the ulnar nerve within the cubital tunnel, leading to entrapment of the nerve at more distal site.

CONCLUSION

Ulnar neuropathy at the elbow occurred in order of Elbow, Distal, and Proximal groups. The morphological changes of the nerve were most prominent in BE 2-cm~ME segment. Patients with larger cubitus valgus angle showed more distal entrapment site, which may predict the precise incision site and the extent of decompression surgery in UNE.

Statement of Disclosures

None

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