

Ultrasonography versus EMG/NCS in the diagnosis of Ulnar nerve entrapment at the elbow

Raghuveer C. Muppavarapu MD, Michael B. Gottschalk MD, Kenneth Brock BS, Anthony Sapienza MD

Introduction

- Ulnar nerve entrapment at the elbow (UNE) is the second most common upper extremity compression neuropathy
- Electrodiagnostic testing (EDx) is the most common test used to confirm the diagnosis
- In comparison to EDx, the diagnostic accuracy of ultrasonography (US) is unknown.
- We hypothesize that US has a higher correlation to clinical examination findings and is more accurate at detecting ulnar nerve entrapment at the elbow than EDx

Methods

- Retrospective review January 2012 - January 2015
- 51 patients were identified who underwent ulnar nerve decompression at the elbow
- 32 patients met the inclusion criteria of having a pre-operative EDx
- 24 of those 32 patients also had an US evaluation
- Pertinent clinical examination included: Tinel, elbow flexion compression test, Semmes Weinstein, 2-point discrimination, intrinsic strength, and FDP strength testing

Results

- 15/32 patients had a positive EDx result
- 17/32 had a negative EDx result
- All 24 patients who had US evaluation of the ulnar nerve at the elbow had a positive finding of ulnar nerve compression.
- Positive correlation between intrinsic strength improvement and FDP strength improvement for the patients with a positive EDx result (Table 1)
- All patients had an improvement in their DASH score (Table 2)
- No correlation between EDx result and DASH score

Table 2: DASH

	Positive EDx, Positive US	Negative EDx, Positive US	All patients
Mean Preop DASH	58.029	46.05	51.04
Mean Postop DASH	24.66	17.82	20.67

Conclusions

- Ultrasonography is a fast, inexpensive, and accurate screening tool for diagnosing UNE
- EDx testing had an unacceptably high false negative detection rate of ulnar nerve compression at the elbow
- US can be used to improve the diagnosis of ulnar nerve compression at the elbow

Table 1: Clinical Testing

EDx result	Percussion of ulnar nerve at elbow (Tinels)	Elbow Flexion Compression test	Semmes Weinstein (improvement)	2-pt disc (improvement)	Intrinsic Strength (improvement)	FDP Strength (improvement)
Positive (n = 15)	13 (86.7%)	10 (66.67%)	11 (73.3%)	14 (93.3%)	14 (93.3%)	12 (80%)
Negative (n = 17)	15 (88.2%)	15 (88.2%)	11 (64.7%)	10 (58.8%)	8 (47%)	6 (35.3%)
p-value	1	0.107	0.857	0.107	0.005	0.02