

## Clinical and USG Findings according to Steroid Injection in Patients with Epicondylitis

Gi-Young Park<sup>1†</sup>, Dong Rak Kwon<sup>1</sup>, Dae Gil Kwon<sup>1</sup>, Joonsang Park<sup>1\*</sup>

Daegu Catholic University Medical Center, Department of Rehabilitation Medicine<sup>1</sup>

### Objective

Steroid injection is one of the common treatment Methods for lateral (LE) and medial epicondylitis (ME). The aim of this study is to compare the clinical and ultrasound findings of the clinical epicondylitis in the patients with LE and ME according to the previous history of steroid injection.

### Materials and Methods

Two hundred and seventy-two elbows (75 men, 197 women; mean age, 52y; age range, 24–76 years) with LE (204 elbows) and ME (68 elbows) were divided into two groups; no steroid injection (143 elbows; 40 males, 103 females; mean age 51 years) and steroid injection (129 patients; 35 males, 94 females; mean age 52 years) (table 1). The clinical diagnosis of epicondylitis was based on the patient's symptoms and clinical signs in physical examination performed by a physiatrist. The criteria for epicondylitis included pain over the lateral and medial elbows that increased on palpation of the lateral and medial epicondyles and resisted extension and flexion of the wrist with the elbow extended. The number of previous steroid injection was divided into two groups (low; less than 3 times, high; more than 4 times). The clinical examination included pain during passive flexion and extension of elbow and resisted motions of wrist including flexion, extension, and radial and ulnar deviation. Visual analog scale (VAS) score was measured to determine the pain intensity of elbow. Ultrasound was performed by the other physiatrist who assessed the following abnormal ultrasound findings: the severity of tendinopathy (tendinosis, partial-thickness and full-thickness tear), cortical irregularity, increased vascularity by power Doppler signal, and intratendinous calcifications (figure 1). The Chi-square test and Mann-Whitney U test were used to evaluate the difference between two groups.

### Results

The symptom duration, VAS score, painful motion score in steroid injection group (12.1+9.3 months; 6.6+1.7; 2.6+1.1) was significantly larger than that in non-injection group (5.2+8.3 months; 5.4+2.1; 2.2+1.2) ( $p<.05$ ) (table 1). Abnormal ultrasound findings including cortical irregularity, increased vascularity, and calcifications in steroid injection group were significantly more common than those in no injection group ( $p<.05$ ), but there is no significant difference of tendinopathy severity according steroid injection (table 2). The symptom duration in high steroid injection group was significantly longer than that in low injection group. However, there was no significant difference of other clinical and ultrasound parameters between high and low steroid injection group.

## Conclusions

Our Results revealed that abnormal ultrasound findings in elbows with steroid injection were more commonly noted than those in elbows without steroid injection. Therefore, multiple steroid injections may influence negatively in echotexture of the common extensor and flexor tendons and epicondyles in patients with epicondylitis.

Table 1. Patient characteristics and clinical findings according to steroid injection in epicondylitis

	No steroid injection group (n=143)	Steroid injection group (n=129)	p value
Mean age (years)	143	129	0.660
Sex (male/female)	40/103	35/94	0.877
Affected side (right/left)	91/52	73/56	0.236
Type of epicondylitis (lateral/medial)	28/115	40/89	0.030*
Symptom duration (month)	5.17±8.3	12.11±14.2	0.000*
Number of steroid injection (≤3/≥4)		79/50	
VAS	5.4 ±2.1	6.6±1.7	0.000*
Number of painful motion	2.2±1.2	2.6±1.1	0.001*

Table 2. Ultrasound Findings according to steroid injection in patients with epicondylitis

Ultrasound finding	No steroid injection group (n=143)	Steroid injection group (n=129)	p value
Severity of tendinopathy (tendinosis/partial- or full-thickness tear)	95/47	88/42	0.817
Cortical irregularity	26	62	0.000*
Increased vascularity	31	71	0.000*
Calcification	42	71	0.000*

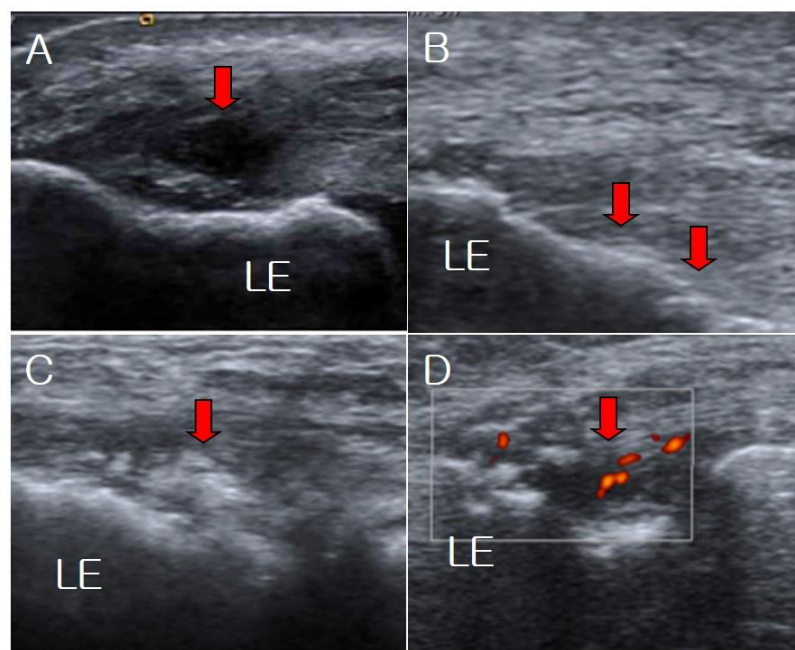


fig 1. Longitudinal ultrasound of lateral epicondyle showed partial-thickness tear of common extensor tendon (A), cortical irregularity of lateral epicondyle (LE) (B), intratendinous calcifications (C), and increased vascularity (D) of common extensor tendon on power Doppler