통증 및 근골격재활
발표일시 및 장소 : **10 월 26 일(금) 15:35-15:45 Room B(5F)**

OP1-2-9

Comparison of imaging findings between calcific tendinitis with bursitis and adhesive capsulitis

Gi Young Park[1†], Dong Rak Kwon[1], Dae Gil Kwon[1*], Dong Han Kim[1]

Daegu Catholic University Medical Center, Department of Rehabilitation Medicine[1]

Objective
To evaluate radiographic and ultrasound (US) findings in the patients with calcific tendinitis of shoulder and compare these imaging findings between the patients with subacromial-subdeltoid (SASD) bursitis and adhesive capsulitis (AC) alone.

Methods
One hundred-thirty-four shoulders (129 patients, 36 men, 93 women; mean age, 56.9+ 9.3 years; range, 33-84 years) that were diagnosed as calcific tendinitis of shoulder on US were recruited from January 1st 2013 to June 31th 2018. Radiographic morphology of calcification was classified by Gartner and Simons method including type 1 (dense with well-defined borders), type 2 (dense with indistinct borders or transparent with well-defined border), and type 3 (transparent with indistinct borders). US morphology of calcification was classified as arc-shaped, fragmented, nodular, cystic, and linear type (Figure 1). Shadow of calcification on US was classified as type 1 (well-defined shadow), type 2 (faint shadow), and type 3 (no shadow). Size of calcification was measured as the maximal diameter on radiograph and US. Power Doppler signal intensity in calcification was graded as no signal, mild, moderate, and severe. Location of calcification in tendon was classified as bursal side, articular side, and full-thickness involvement. The patients were allocated into two groups according to response to US guided injection; group 1 (responder to SASD bursa injection, 75 patients, 21 men, 54 women; mean age, 56.3 ± 9.1 years; range, 33-77 years) and group 2 (responder to glenohumeral joint injection, 54 patients, 15 men, 39 women; mean age, 57.7 ± 9.5 years; range, 43-84 years). Visual analogue scale was reduced more than half at two weeks after injection in both groups.

Results
There was no significant difference of demographic data between two groups (Table 1). There was a significant difference of US morphology, power Doppler signal intensity, and location of calcification between two groups (Table 2). Fragmented type was 55 calcifications (75.3%) in group 1 and 18 (24.7%) in group 2, and arc-shaped type was 20 (69.0%) in group 2 and 9 (31.0%) in group 1 ($p<.001$). Power Doppler signal intensity in group 1 (0.7 ± 0.8) was stronger than that in group 2 (0.4 ± 0.6) ($p=.008$). Articular side location was 39 calcifications (61.9%) in group 2 and 24 (38.1%) in in group 1, and bursal

side/full-thickness were 24 (85.7%) / 30 (69.8%) in group 1 and 4 (14.3%) / 13 (30.2%) in group 2 (p<.001). There was no significant difference of radiographic morphology, size, and US shadow between two groups.

Conclusions

Our Results indicated that the morphology, power Doppler signal intensity, and location of calcification on US is associated with the pain of shoulder calcific tendinitis. Therefore, the US assessment of morphology, power Doppler signal intensity, and location of calcification can help to decide the target of treatment in the patients with shoulder calcific tendinitis.

Table 1. Demographic data in shoulder calcific tendinitis with subacromial-subdeltoid bursitis and adhesive capsulitis

	Group 1 (n=78)	Group 2 (n=56)	P value
Age (year)	56.3 ± 9.1	57.7 ± 9.5	0.387
Sex, n (%)			
Male	21 (26.9)	15 (26.8)	0.986
Female	57 (73.1)	41 (73.2)	
Weight (kg)	59.1 ± 9.3	60.2 ± 9.7	0.530
Height (cm)	161.1 ± 7.9	161.8 ± 7.7	0.619
Body mass index	22.7 ± 2.3	23.0 ± 2.7	0.548
Symptom duration (months)	3.5 ± 4.0	4.2 ± 3.9	0.375
Associated disease, n (%)			
DM	8 (10.3)	12 (21.4)	0.073
Stroke	0 (0.0)	1 (1.8)	0.236
Thyroid disease	2 (2.6)	2 (3.6)	0.735
Heart disease	4 (5.1)	1 (1.8)	0.314

Group 1, calcific tendinitis with subacromial-subdeltoid bursitis; group 2, calcific tendinitis with adhesive capsulitis

Values are mean ± SD.

Table 2. Radiographic and ultrasound findings in shoulder calcific tendinitis with subacromial-subdeltoid bursitis and adhesive capsulitis

	Group 1 (n=78)	Group 2 (n=56)	P value
Radiographic classification, n (%)			
No calcification	12 (15.5)	2 (3.6)	
Type 1	9 (11.5)	12 (21.4)	0.093
Type 2	48 (61.5)	35 (62.5)	
Type 3	9 (11.5)	7 (12.5)	
Radiographic diameter (mm)	10.1 ±	9.3 ± 4.7	0.613
Ultrasound morphology, n (%)			
Arc-shaped	9 (11.5)	20 (35.7)	
Fragmented	55 (70.5)	18 (32.1)	<0.001*
Nodular	14 (17.9)	14 (25.0)	
Linear	0 (0.0)	4 (7.1)	
US longitudinal diameter (mm)	9.5 ± 4.1	8.4 ± 3.2	0.097
US transverse diameter (mm)	7.0 ± 3.0	6.6 ± 3.0	0.497
Power Doppler signal intensity	0.7 ± 0.8	0.4 ± 0.6	0.008†
Location, n (%)			
Articular	24 (30.8)	39 (69.6)	
Bursal	24 (30.8)	4 (7.1)	<0.001*
Full-thickness	30 (38.5)	13 (23.2)	

Group 1, calcific tendinitis with subacromial-subdeltoid bursitis; group 2, calcific tendinitis with adhesive capsulitis

* P-values calculated by chi-squared test

† P-values calculated by Mann-Whitney U test

Values are mean ± SD.

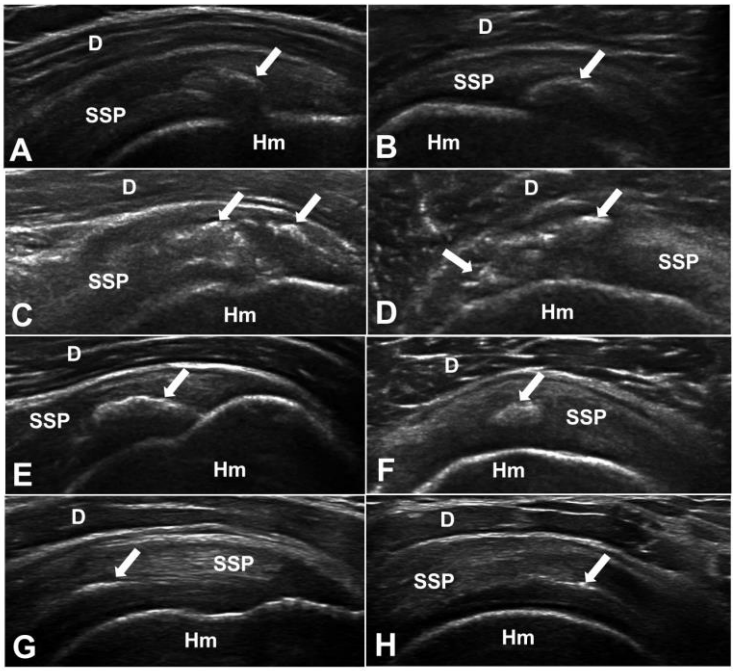

Figure 1. Morphology of calcification on longitudinal and transverse ultrasound imaging. (A, B) arc-shaped type (C, D) fragmented type, (E, F) nodular type, (G,H) linear type; D, deltoid muscle; SSP, supraspinatus muscle; Hm, humeral head; arrow, calcification