

## New Onset Bilateral Painful Shoulder in Patients with Polymyalgia Rheumatica and Rheumatoid Arthritis: An Ultrasound Study.

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**Background/Purpose:** Ultrasound (US) has shown synovial intraarticular and/or periarticular inflammation in painful shoulders from patients with polymyalgia rheumatica (PMR) and rheumatoid arthritis (RA). The feature of different US inflammation patterns may have important pathogenic and therapeutic implications. We compared US inflammatory findings in PMR and RA patients with new onset bilateral painful shoulder.

**Methods:** Patients with previous diagnosis of PMR (1984 Healey criteria) and RA (2010 ACR/EULAR criteria) complaining of new onset bilateral painful shoulder were included. Subjects without any known inflammatory rheumatic condition with new onset unilateral painful shoulder were assessed as control group. Exclusion criteria were:  $\geq 18$  years old, oral prednisone dose  $\geq 10$  mg per day, previous surgery on the shoulder, trauma or corticosteroid injection within the last 2 months. US assessment was performed bilaterally in all patients and unilaterally in controls by the same experienced rheumatologist sonographer who was blinded to clinical data. US examinations were performed with a My Lab 70 (Esaote) machine equipped with 6–18 MHz broad band multifrequency linear transducer and included the detection of subacromial-subdeltoid (SAD) bursitis, long head biceps (LHB) tenosynovitis and/or gleno-humeral (GH) synovitis by a dichotomous evaluation (presence/absence). Standardized scanning method and published reference values were used. Frequency of each feature was calculated and compared between groups by chi<sup>2</sup> test. A p value  $\leq 0.05$  was considered significative.

**Results:** Thirty PMR patients (mean age 74  $\pm$  8 years, 26 female/4 male), 30 RA patients (mean age 64  $\pm$  12 years, 24 female/6 male) and 60 controls (mean age 69  $\pm$  15, 48 female/12 male) were included for a total of 60 shoulders evaluated in each study group. SAD bursitis and LHB tenosynovitis were significantly more frequent in PMR patients than in RA and controls (table). GH synovitis was most common in RA than in PMR and controls (table). Bilateral SAD bursitis was detected in 11 out of 30 (36,6%) patients with PMR and in only 1 out of 30 (3,3%) rheumatoid arthritis patients (p  $\leq 0.0012$ ) and bilateral LHB tenosynovitis was found in 9 out of 30 (30%) PMR patients in contrast with none (0/30) rheumatoid arthritis patients (p  $\leq 0.0011$ ). No differences were found on bilateral GH synovitis between PMR and RA patients (p  $\leq 0.3006$ ).

**Table.** Frequency of the different shoulder ultrasound findings in the different study groups.

	Polymyalgia rheumatica vs Rheumatoid arthritis	Polymyalgia rheumatica vs control group	Rheumatoid arthritis vs control group
Subacromial-subdeltoid bursitis	33/60 (55%) vs 11/60 (18.3%)	33/60 (55%) vs 15/60 (25%)	11/60 (18.3%) vs 15/60 (25%)
Shoulder affected/Total shoulder examined (%)	<i>p</i> < 0.0001	<i>p</i> = 0.0008	<i>p</i> = 0.6576
Long head biceps tenosynovitis	28/60 (46.6%) vs 14/60 (23.3%)	28/60 (46.6%) vs 12/60 (20%)	14/60 (23.3%) vs 12/60 (20%)
Shoulder affected/Total shoulder examined (%)	<i>p</i> = 0.0074	<i>p</i> = 0.0019	<i>p</i> = 0.3754
Glenohumeral synovitis	7/60 (11.7%) vs 16/60 (26.7%)	7/60 (11.7%) vs 4/60 (6.6%)	16/60 (26.7%) vs 4/60 (6.6%)
Shoulder affected/Total shoulder examined (%)	<i>p</i> = 0.0369	<i>p</i> = 0.3426	<i>p</i> = 0.0033

PMR, RA and controls

**Conclusion:** We found differences on the inflammation pattern detected by US between PMR and RA. Periarticular involvement was more frequent in PMR and intra-articular involvement was more common in RA. US might be a useful tool to determinate the musculoskeletal structure actually affected during new onset painful shoulder in these rheumatic conditions helping to take a correct therapeutic decision.