

## Ultrasound imaging for the rheumatologist XXXIX. Sonographic assessment of the hip in fibromyalgia

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### ABSTRACT

*Fibromyalgia syndrome (FMS) is a common form of non-inflammatory rheumatism within the general population with symptoms often mimicking those of arthritis or muscle disorders. Arthralgic symptoms in the region of the hip are commonly mentioned by patients with FMS and one of the diagnostic trigger points for the condition is found around the greater trochanter. To date, no formal imaging studies using ultrasound (US) have been performed in FMS.*

*This study describes the correlation between clinical and US findings in patients presenting with primary FMS to rheumatology clinics.*

*In the majority of the patients, no significant pathological US abnormalities were detected.*

### Introduction

Fibromyalgia syndrome (FMS) is a common disorder within the general population with estimates of prevalence between 1–4% (1-2). The condition can be primary or secondary to other chronic conditions, including rheumatoid arthritis, osteoarthritis, connective tissue disorders and chronic infection (3-5). The underlying etiology of FMS is currently unknown and indeed views relating to the disorder can be quite controversial within the medical community. The hip is amongst several anatomical regions from which patients with FMS frequently derive pain. To date, no large population studies have been performed estimating its exact prevalence (6). Classification criteria for FMS focus on the presence of tender points, also known as trigger points, and one such trigger point is found on the outer aspect of the greater trochanter (5, 7). In recent years, proposals to change the

diagnostic criteria have been suggested, with less emphasis on the identification of such trigger points and more towards symptom-based diagnosis (8).

In patients with FMS it is imperative to exclude alternative pathologies and this often involves imaging modalities to look for structural anomalies of the hip joint. US is being increasingly used as an effective tool to identify soft tissue and joint pathology in the hip region.

Our group have already described the advantages relating to the superiority of US to blind clinical examination of the hip region (9-11).

To our knowledge, this is the first formal imaging study using ultrasound (US) to have been performed in FMS.

This study describes the correlation between clinical and US findings in patients presenting with primary FMS to rheumatology clinics.

### Methods

The study was conducted according to the Declaration of Helsinki and local regulations, and informed consent was obtained from all patients.

### Patients

Patients who fulfilled the 1990 American College of Rheumatology criteria for FMS (7), and attending the out-patient clinics of the Rheumatology Departments involved in this multicentre study were consecutively recruited.

### Study design

All patients underwent a complete clinical assessment by an expert rheumatologist who recorded the presence/absence of pain/tenderness (by palpation and/or active or passive mobilisation of the hip). Moreover, the Lequesne questionnaire was used to estimate the

severity of hip impairment (12). Prior to the beginning of the study, sonographers reached a consensus on both the scanning technique to adopt and the pathological findings to detect. One sonographer for each centre performed the US examinations, blinded to patients' clinical data.

The patients were placed in a supine position, with the hip joints in neutral position. US was performed with a Logiq 9 machine (General Electrics Medical Systems, Milwaukee, WI) with a 6–8 MHz multi-frequency linear array transducer. A standardised longitudinal anatomic section plane along the neck of the femur was used to visualise the anterior capsule, in order to detect US findings indicative of hip joint inflammation according to the EULAR guidelines for musculoskeletal ultrasound in rheumatology (13). A multiplanar scanning technique was adopted to confirm the presence of all pathological findings.

Sonographic measurements of enthesal thickness were performed where it appeared maximal as in previous studies by the group (10, 11). The following anatomic sites were examined: hip joint, trochanteric bursa, ilio-psoas bursa, gluteus tendons, and ilio-psoas tendon. Power Doppler assessments were carried out according to the indications provided by Torp-Pedersen *et al.* (14).

#### US image interpretation

Sonographic findings indicative of hip pathology were documented and reported. For the detection of synovial fluid, synovial hypertrophy, bone erosion and enthesopathy the US definitions described by the OMERACT special interest group (15) were adopted. The limit for normal hip dimension was defined according to Koski *et al.*, with values  $\geq 7$  mm and a difference of 1 or more mm is suggestive of joint space widening (16).

The presence of osteophytes was defined by the detection of characteristic irregularities of the bone profile as described in previous studies concentrating on osteoarthritis (17–21).

#### Results

A total of 64 patients were assessed.

**Table I.** Patient demographic and clinical data.

Number of patients	64
Gender (female/male)	40/24
Age in years (range)	54.6 (23–81)
Disease duration in months; mean (range)	92.9 (6–360)
Tender points (mean)	12.3 (0–18)
Lequesne score; mean (range)	6.2 (0–17)
Number of patients with current painful hip in at least one side (%)	33 (52%)
Number of patients with history of painful hip in at least one side (%)	38 (59%)
Number of patients with no history of painful hip and no current painful hip (%)	19 (30%)
Number of patients on NSAIDs (%)	10 (16%)
Number of patients on steroid therapy (%)	6 (9%)

**Table II.** Relationship between sonographic and clinical findings. The presence of at least one clinical finding indicative of pain at hip level was used to compile the table.

			Clinical findings - Painful hip		
			Presence	Absence	Total
Sonographic findings	Joint effusion	Presence	9	2	11
		Absence	39	78	117
		Total	48	80	128
	Synovial hypertrophy	Presence	0	0	0
		Absence	48	80	128
		Total	48	80	128
	Intra-articular power Doppler signal	Presence	0	0	0
		Absence	48	80	128
		Total	48	80	128
	Osteophytes	Presence	15	25	40
		Absence	33	55	88
		Total	48	80	128
	Trochanteric bursitis	Presence	5	4	9
		Absence	43	76	119
		Total	48	80	128
	Ilio-psoas bursitis	Presence	0	2	2
		Absence	48	78	126
		Total	48	80	128
	Gluteus tendinopathy	Presence	10	25	35
		Absence	38	55	93
		Total	48	80	128
	Ilio-psoas tendinopathy	Presence	4	11	15
		Absence	44	69	113
		Total	48	80	128

Basic patient demographic and clinical data of the study population are reported in the Table I

US examination of the hip joint revealed evidence of minimal joint effusion in 14% of cases, mostly correlating with the presence of hip pain. A bursae effusion was present in 9/64 (14%) patients. Other hallmark features of inflammatory hip joint disease including synovial hypertrophy, bone erosion and intra-articular Doppler signal were not seen.

The most common tendon to demon-

strate US pathology was the gluteus tendon.

Table II shows the relationship between clinical and US findings indicative of hip region pathology.

The results of the Lequesne questionnaire showed that a severe to extremely severe impairment was present in at least 19/64 (29.7%) patients, while a normal value was found in only 11/64 (17.2%) of patients. US findings were poorly represented in the group with no impairment (data derived from the Lequesne questionnaire), with only two patients

showing monolateral ilio-psoas tendinopathy and another couple monolateral osteophytes. Only four patients in the group of severe to extremely severe impairment had negative US findings.

### Discussion

Pain in the hip region is a frequent complaint from patients suffering from FMS.

The hip region does contain one of the classical trigger points seen commonly in the condition. However, apparently, there is no relationship between the Lequesne results and the number of positive tender points (only one of the Lequesne negative patients was also negative for tender points), with no significant differences for this item between the subgroup of impairment as shown by the Lequesne results, confirming the scarce utility of using tender points to investigate the severity of the disease (22). Our group has previously shown that US is an effective tool to image the hip region and which can be a more sensitive indicator of the underlying focus for pain (8-10). In patients with FMS, pain in the hip region can often be diffuse thereby making diagnosis of musculoskeletal pathology complex.

To date, no imaging studies using US have been performed in patient cohorts with FMS.

This observational multicentre study has shown that there is a low yield of definite musculoskeletal abnormalities within the hip region in a small cohort of FMS patients. Whilst a small number had US detected hip effusion, this was minimal and not felt to correlate with any inflammatory symptoms.

There was clinical over-estimation of inflammatory involvement of the soft tissues which was not borne out by the subsequent US examination. Due to the relatively small number of patients enrolled in the present study, it is dif-

ficult to draw definite conclusions on the prevalence of US findings in FMS and to be certain how much these findings may be contributing to some of the pain within the hip region in this patient group. For instance, the quite high number of osteophytes detected by US can be explained by the mean age of the study population, higher than 50 years. Moreover, the impact of US findings in patients with FMS should be comparatively investigated in healthy and disease controls.

In conclusion, since clinical examination may generate frequently false-positive results in patients with FMS, the higher specificity of the US findings can be used to confirm hip joint and peri-articular soft-tissue involvement.

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