THE REMS TECHNIQUE IS NOT AFFECTED BY THE LEVEL OF AGREEMENT BETWEEN CLINICAL EXAMINATION AND ULTRASONOGRAPHY IN EARLY ARTHRITIS

Loredana Cavalli1, Fiorella Anna Lombardi1, Daniele Perrone1, Maria Luisa Brandi2. 1Institute of Clinical Physiology – National Research Council, IFCC-CNFR, Lecce, Italy; 2Unit of Diseases of Mineral and Bone Metabolism, CTO, AOUCareggi, Firenze, Italy

Background: The measurement of bone mineral density (BMD) with dual-energy X-ray absorptiometry (DXA) is the current “gold standard” for diagnosing and monitoring osteoporosis, any errors in demographic information, improper patient positioning, incorrect scan analysis or interpretation can lead to erroneous results and decisions [1]. Moreover, a common condition represented by osteoarthritis, by modifying the joint soft tissues composition, can alter the values of BMD [2].

In patients affected by disarticulation, in fact, osteoporotic T-score values at femoral neck (FN) can be associated with normal or osteopenic T-score values of the lumbar spine (LS), the latter influenced by the presence of osteoarthritis and/or subchondral bone sclerosis.

Objectives: To evaluate the agreement between clinical examination and US findings of metacarpophalangeal and proximal interphalangeal joints of patients with early arthritis.

Methods: Patients from the EAC of our department with suspect arthralgia were included. Patients were submitted to clinical evaluation by a rheumatologist to identify tender and swollen joints. They were then submitted to an US examination of metacarpophalangeal (MCP) and proximal interphalangeal (PIP) joints, by an experienced sonographer oblivious of the previous examination. Each joint was scored for the presence of synovial hypertrophy (SH) and Power Doppler (PD) signal. Based on OMERACT guidance, we defined synovitis as: ≥ grade 1 grey scale synovitis (hypoechoic SH regardless of the presence of effusion) and ≤ grade 1 power-Doppler. The diagnostic value of clinical evaluation was assessed through sensitivity, specificity, Negative predictive value (NPV) and Positive predictive value (PPV), assuming the US synovitis as gold standard. Clinical arthritis was defined by joint swelling. Cohen’s kappa coefficient was used to analyze concordance between joint swelling appreciated by clinical exam and HS, PD and the presence of synovitis.

Results: 77 consecutive patients were included (53.2% female) with a mean age of 53.8±19.1 years. We evaluated 770 MCP and 770 PIP joints. The sensitivity and specificity of clinical examination in relation to US synovitis was respectively 71% and 60% for MCP and 54.5% and 45.9% for PIP. The NPV and PPV for MCP were 87.8% and 33.3% respectively, and for PIP were 85.3% and 33.3%. Table 1 shows the level of agreement between joint swelling and HS, PD and the presence of synovitis.

Disclosure of Interests: None declared


REFERENCES
Table 1 - Level of agreement between clinical exam and US synovitis

<table>
<thead>
<tr>
<th>Synovial hypertrophy</th>
<th>Power Doppler signal</th>
<th>Synovitis §</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCP</td>
<td>0.32 *</td>
<td>0.33 *</td>
</tr>
<tr>
<td>PIP</td>
<td>0.11 *</td>
<td>0.08 *</td>
</tr>
<tr>
<td>All joints</td>
<td>0.21 *</td>
<td>0.21 *</td>
</tr>
<tr>
<td>joint tenderness and US synovitis §</td>
<td>0.19 *</td>
<td>0.20 *</td>
</tr>
<tr>
<td>MCP</td>
<td>0.17 *</td>
<td>0.22 *</td>
</tr>
<tr>
<td>PIP</td>
<td>0.17 *</td>
<td>0.12 *</td>
</tr>
<tr>
<td>All joints</td>
<td>0.16 *</td>
<td>0.16 *</td>
</tr>
<tr>
<td>joint tender and swelling and US synovitis §</td>
<td>0.09 *</td>
<td>0.11 *</td>
</tr>
<tr>
<td>MCP</td>
<td>0.29 *</td>
<td>0.28 *</td>
</tr>
<tr>
<td>PIP</td>
<td>0.11 *</td>
<td>0.07 *</td>
</tr>
<tr>
<td>All joints</td>
<td>0.19 *</td>
<td>0.17 *</td>
</tr>
</tbody>
</table>

§ Defined as ≥ grade 1 grey scale synovitis and ≥ grade 1 power-Doppler.

* p<0.001; † p=0.006

Conclusion: The clinical evaluation of MCP showed a better performance than clinical evaluation of PIP. The high NPV of clinical examination makes it suitable to be used to rule out MCP and PIP involvement in patients with early arthritis. The performance of the two assessment strategies on the same day may increase agreement and diagnostic certainty.

REFERENCES


Disclosure of Interests: None declared

SAT0539 DUAL ENERGY CT FINDINGS IN GOUT WITH RAPID KILOVOLTAGE-SWITCHING SOURCE WITH GEMSTONE SPECTRAL IMAGING

Elin Svensson1, Ylva Aurell1, Lennart T H. Jacobsson2, Anton Landgren2, Valgurud Sigurdardottir3, Mats Dehlin2. 1Institute of Clinical Sciences at Sahlgrenska Academy at University of Gothenburg, Dept of Radiology, Gothenburg, Sweden; 2Inst of Medicine at Sahlgrenska Academy at University of Gothenburg, Dept of Rheumatology and Inflammation Research, Gothenburg, Sweden

Background: The gold standard for diagnosis of gout is the demonstration of monosodium urate(MSU) crystals in the synovial fluid or in tophi. However, joint aspiration is seldom performed and most patients do not have visible tophi. Dual energy CT(DECt) has been shown capable of detecting MSU crystals with high precision in many studies but the vast majority of these studies were performed using CT scanners with two X-ray tubes(dual source) while the performance of other technical CT solutions are much less investigated.

Objectives: In the present study we wanted to investigate the performance of DECT with rapid kilovoltage-switching source with Gemstone Spectral Imaging(GSI) to identify MSU crystals and validate these results against severity of gout disease.

Methods: Patients with incident/prevalent gout who had been examined with DECT GSI scanning of the feet at Sahlgrenska University Hospital, Sweden between 2015 and 2018 were identified. Their medical records were examined for gout disease characteristics (onset of disease, tophi, erosive disease), comorbidities, medication, body mass index(BMI), serum urate, and renal function. Their DECT GSI images were examined by two radiologists in two consensus readings. Urate deposits in MTP1, MTP 2-5, ankle/midfoot joints and tendons were scored semiquantitatively as follows: 0, no deposits; 1, dots; 2, single deposit and 3=more than 1 deposit, thus generating a maximum total score of 24 for both feet and a maximum score of 6 per location. Presence of artefacts in nail and skin as well as beam hardening and noise were also identified.

Results: We identified a total of 55 patients, mean age 58 years (SD=15), with a clinical diagnosis of incident or prevalent gout who all fulfilled the 2015 ACR/EULAR classification criteria for gout. Mean disease duration was 7 years (SD=3, range 0-33). A minority of patients (40%) were on urate lowering treatment(ULT) at time of DECT(table1). The majority of patients had increased urate (>360 μmol/L), irrespective of ULT(table 1). Urate deposits were found in the feet of all patients, most commonly seen in the MTP-joints but also present in ankle/midfoot joints and tendons(table 1). The total urate deposit score was significantly higher in the presence of clinically identified tophi(Wilcoxon Mann-Whitney, p=0.0005) and correlated strongly to disease duration(Spearman corr. coefficient 0.64, p<0.0001) while no association or correlation was seen to age, sex, erosive disease, urate levels, BMI, diuretic or ULT use or renal function. The majority of patients displayed nail artefacts while skin artefacts only were seen in 31% (table 1). Beam hardening was only found in one patient and noise was not seen at all(table 1).

Conclusion: The DECT GSI technique performs well in detection of urate deposits and these correlate to clinical gout characteristics in the same manner as previously shown with DECT dual source technique.

Disclosure of Interests: None declared

SAT0540 CLINICAL AND ULTRASONOGRAPHIC ASSESSMENT OF STERNOCLAVICULAR JOINT IN PATIENTS WITH RA

Hassan Bassiouni1, Khaled Zaky2, Hany Elitt2, Ibrahim Elisakka1, 1Al-Azhar, Cairo, Egypt; 2Al-Azhar University, Rheumatology, Cairo, Egypt

Background: The sternoclavicular (SC) joint is a real diarthrodial joint that can be affected during the route of RA; but, its scientific implications appear to remain underestimated through the rheumatology network. (1) ultrasound (US) is right extensively common imaging approach in each clinical exercise and in rheumatology studies to visualize joints and tender tissues. To date, there is a regular frame of evidence assisting its validity, reliability, and feasibility inside the evaluation of persistent inflammatory arthritis and its higher sensitivity than scientific exam in the analysis of synovitis, enthesitis, and tofosynovitis in these patients (2).

Objectives: To describe the prevalence of sternoclavicular (SC) joint involvement and the relationship between clinical and ultrasound (US) findings in patients with rheumatoid arthritis.

Methods: 120 subjects with age range from 20 to 50 years were recruited from Physical Medicine, Rheumatology and Rehabilitation department of Sayed Galal and Al-Hussein Al-Azhar University Hospitals, during the period from April 2018 to October 2018. All the patients were informed about the study and signed an informed consent.

Subjects were divided into two groups: Group A: 60 patient known as RA fulfilling ACR criteria for classification of rheumatoid arthritis (1987) (3). Group B: 60 normal control subjects.

All subjects have been clinically examined and t blinded US examinations of the SC joint were performed bilaterally in both groups. The presence of gray-scale synovitis, erosions, and intraarticular power Doppler (PD) was recorded.

Results: A total of 240 SC joints were evaluated: 120 from patients with RA and 120 from healthy controls. In the RA group, 21 joints (17.5%) were found to be clinically involved (pain/swelling), in contrast to only 6