Conclusions: These preliminary results suggest that an increased value of IMT may be observed in patients with very high or high risk of CV disease. However, the IMT value was higher than the reference cut-off only in a limited number of the studied arteries.

REFERENCES:

Disclosure of Interest: None declared
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SAT0663
SCREENING RESEARCH OF ULTRASONOGRAPHIC PERIPHERAL ARTHRITIS AND ENTHESITIS IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE
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Background: Some patients with inflammatory bowel diseases (IBD) such as ulcerative colitis (UC) and Crohn’s disease (CD) develop spondyloarthritis (SpA).

Conventional, the assessment of affected joint count in patients with SpA was relied for the detection of swelling and tenderness in the joints and enthesis by clinical physical examination. To date, high quality ultrasonography (US) can detect inflammatory condition in the joint and enthesion more sensitively than clinical assessment.

Objectives: The aim of this study was to research the utility of US screening for detection of peripheral arthritis in patients with IBD.

Methods: Total 42 patients including 27 patients with UC and 15 patients with CD were consecutively included. HI VISION Ascendus (HitachiAloka Medical, Tokyo, Japan) was used with an 18 MHz linear array transducer. US examination was performed in MCP, PIP, DIP and wrist joints in both hand. Greyscale (GS) and power Doppler (PD) US were scored on a 0–3 semiquantitative scale for each joint. Moreover, the US assessment of enthesis was performed. Lateral epicondyle, triceps enthesis, the proximal and distal patella tendon enthesis, Achilles tendon and fascia plantaris tendon enthesis were scanned in both GS and PD assessment. Abnormal findings of enthesis was defined structure, thickness, bursitis, erosion, calcification in GS and power Doppler signal.

Results: In the joint clinical assessment, 12 patients with UC and 7 patients with CD had joint symptoms. US active synovitis (GS Grade 2–3; PD Grade 2+) was found in 8 patients with UC and 6 patients with CD. The concordance rate between clinical findings and US findings was relatively high and US assessment was of high sensitivity and specificity. Active enthesitis in US was found in 8 patients with UC and 6 patients with CD. The concordance rate between clinical findings and US findings was relatively high and subclinical enthesis was also found in many patients.

<table>
<thead>
<tr>
<th>UC (n=27)</th>
<th>CD (n=15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male (%)</td>
<td>9 (33.3%)</td>
</tr>
<tr>
<td>Age (years)</td>
<td>46.1±14.2</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>161.2±8.4</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>56.4±17.4</td>
</tr>
<tr>
<td>BMI</td>
<td>21.3±4.9</td>
</tr>
<tr>
<td>Duration of IBD (years)</td>
<td>13.3±12.5</td>
</tr>
<tr>
<td>Clinical peripheral joint symptom</td>
<td>12 (44.4%)</td>
</tr>
<tr>
<td>Arthritis US synovitis (GS grade 2–3; PD grade 2+)</td>
<td>8 (28.6%)</td>
</tr>
<tr>
<td>Clinical enthesial symptom</td>
<td>9 (33.3%)</td>
</tr>
<tr>
<td>US enthesitis (any pathological findings)</td>
<td>16 (59.3%)</td>
</tr>
<tr>
<td>Inflammatory back pain</td>
<td>12 (44.4%)</td>
</tr>
</tbody>
</table>

Conclusions: The peripheral arthritis and enthesitis findings in patients with IBD was compared between radiology and US examination. The prevalence rate of subclinical synovitis was not high, thus US screening might not be useful in patients with IBD without arthritis symptom. However, the subclinical enthesis was found in patients without any enthesial symptoms. US screening might be useful to detect subclinical enthesitis than clinical examination in patients with IBD.

REFERENCE:

Disclosure of Interest: None declared

SAT0662
A NEW OPERATOR INDEPENDENT AUTOMATIC TOOL FOR ACCURATE IDENTIFICATION OF VERTEBRAL FRAGILITY FRACTURES
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Background: Osteoporosis is a systemic skeletal disease characterised by a compromised bone resistance that predisposes a subject to an increased risk of fracture. In particular, vertebral fractures are the most common of all osteoporotic fractures. A common clinically-used method for vertebral fracture detection is vertebral morphometry, which is based on measurements of front (Hf) and rear (Hr) heights of vertebral bodies in radiographic images. This method is quantitative and does not require specific operator skills, but its actual accuracy is affected by errors made during the time-consuming manual measurements.

Objectives: In this work we propose a fully automatic algorithm for morphometric measurement, whose final goal is to reduce errors due to manual and semi-automatic processes. Our automatic method identifies the vertebrae and their edges. Then, the algorithm measures the characteristic vertebral heights (Hf, Hr, Hm) and determines possible vertebral deformities.

Methods: The vertebral morphometry uses lateral X-ray images and it is based on height measurements of vertebral bodies:

\[ Hf = |P1 – P2|, \]
\[ Hr = |A1 – A2|, \]
\[ Hm = |M1 – M2|, \]

Where: Pi: rear vertebral corners; Mi: middle vertebral points; Ai: front vertebral corners.

The vertebral deformities can be determined as follows: biconcave deformity: Hf/Hr<0.80, crushing deformity: Hf/Hr<0.80, wedge deformity: Hf/Hr<0.80.

The main problem in implementing our fully automatic algorithm was the correct placement of the six reference points for each detected vertebra. Our approach first combined literature-reported methods for the identification of vertebrae in X-ray images, subsequent emphasis on the vertebral border (Hf), middle (Hm) and rear (Hr) heights of vertebral bodies in radiographic images. This method is quantitative and does not require specific operator skills, but its actual accuracy is affected by errors made during the time-consuming manual measurements.

Results: The performance tests were based on the comparison between the results coming from our automatic approach and those obtained from the manual measurements by an experienced radiologist. We analysed 100 conventional lateral X-ray images, subsequent emphasise the vertebral borders. The four corners of the vertebra (P1, P2, A1, A2) were localised on the borders detected vertebra. While, the middle points M1, M2 were positioned at equal distance from P1, P2 and A1, A2, the specificity of 99.0%. Average errors in the localisation of characteristic points were always smaller than 3 mm. Bland-Altman analysis document a mean error in automatic measurements of diagnostic ratios of 0.01±0.15 (bias ±2 SDs), while Pearson’s correlation coefficient resulted r=0.71 (p<0.001).

Conclusions: Obtained results of our method compared to the results obtained by a trained radiologist showed an acceptable low error rate, a very good performance in vertebral detection and the same diagnosis (normal, biconcave deformity, crushing deformity, and wedge deformity). Overall, the adopted method has a strong potential for an effective employment in clinical routine for fast and accurate diagnosis of vertebral fractures.

REFERENCE:

Disclosure of Interest: None declared

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