PRELIMINARY DATA ON THE ROLE OF CONTRAST ENHANCED ULTRASOUND (CEUS) IN EARLY DIAGNOSIS AND STAGING OF RHEUMATOID ARTHRITIS

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ABSTRACT

This paper is concerning with Rheumatoid Arthritis (RA) and the use of CEUS in the diagnosis and staging of the disease. 51 patients were studied for this clinical syndromes, radiology and biomarkers. The contrast enhanced ultrasound allows to establish an early diagnosis and staging of RA by monitoring the vascular progression of the synovial membrane. There are good perspectives for further confirmation of the methodology.

KEYWORDS: Rheumatoid arthritis, CEUS, biomarkers.

Introduction

The aim of the study is to evaluate the role of ultrasonography with contrast enhanced ultrasound (CEUS) (Chang et al., 2014) in the early identification of the inflammatory process to the wrists (Damjorov et al., 2012) and its involved in the staging of rheumatoid and psoriatic arthritis. The joints of the hand can be place for several disease processes ranging from osteoarthritis to the various forms of arthritis, with mild arthralgia to severe deformation with consequences, cause of disability (Gibbonsky, 2016). Rheumatoid arthritis (RA) is a chronic autoimmune disease (Altucci and Tarro, 2014) characterized by systemic inflammation and joint damage (Tarro and Altucci, 2014), which affects about 1% of the population (Rossini et al., 2014). The earlier and frequently affected joints are the metacarpophalangeal (Kybur et al., 2006) and proximal interphalangeal (Frisell et al., 2014). The detection of alterations in these joints can be considered index of spreading joint damage. The possibility of early identification of a rheumatoid arthritis (Berghin et al., 2006) by setting the type and level of activity (Li et al., 2014), can allow to set an appropriate therapy (Kybur et al., 2011), to monitor it in the long run and therefore to prevent the damage caused by blocking its developing disease.

Materials and Methods:

From January 2014 to December 2015 51 consecutive patients were enrolled, 31 female and 20 male, caucasians, in which it was suspected, on the basis of symptomatic claims, the RA; subsequently laboratory (Dessicin et al., 2004) and instrumental tests (Pincus, 2008; You et al., 2014) were performed for routine diagnosis. Each patient was then subjected to CEUS using 2.2 ML of SonoVue (Bracco) ((Westwood et al., 2013) and using high frequency linear probes (13 -15 MHz) (Toshiba Aplio XG) (Arit et al., 2016).

All patients were monitored for 12 months after the first examination on a quarterly follow-up.

Results and Discussion:

Fourteen of 51 patients showing classical symptoms for RA were seronegative (Dai et al., 2010) and without any instrumental findings (Rx-NMR) indicative for the disease (see table). At CEUS 10:14 showed a contrastographic behavior characterized by a hypervascular appearance of the synovial membrane (SM) with the linear microbubble perfusion, uniform and constant, we have called this behavior "Linear pattern" consistent with an early stage of the disease when the anatomy of the capillary arterial vessel of SM is kept normal (De Zordo et al., 2010) and without any instrumental findings (Rx-NMR) indicative for the disease (see table).

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REFERENCEs


Table- Monitoring of Patients with Rheumatoid Arthritis

<table>
<thead>
<tr>
<th>Patients Number</th>
<th>Sub Category</th>
<th>Clinical Signs</th>
<th>Serum Markers</th>
<th>XR &amp; NMR Signals</th>
<th>CEUS Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>Present</td>
<td>Positive</td>
<td>Various</td>
<td>Progressive</td>
<td></td>
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<tr>
<td>21</td>
<td>Present</td>
<td>Positive</td>
<td>Advanced</td>
<td>Ipso-enhancement</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Present</td>
<td>Positive</td>
<td>Not Clear</td>
<td>Iso-enhancement</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Present</td>
<td>Negative</td>
<td>Absent</td>
<td>See below</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Present</td>
<td>Negative</td>
<td>Absent</td>
<td>Linear pattern</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Present</td>
<td>present</td>
<td>present</td>
<td>Confirmed</td>
<td></td>
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</tbody>
</table>

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