Methods of Visualization and Other Sophisticated Methods in Rheumatoid Arthritis

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illnesses stimulated the development of noninvasive radiological techniques for early and accurate diagnosis of these illnesses. Magnetic resonance (MR) plays a big role in that, due to its great ability to enable high contrast and spatial resolution in recording joints, muscles, ligaments, cartilage and synovia.(2,3,4)

Computerized tomography and mielography is also used in diagnosing rheumatologic illnesses. Bone scintigraphy is very significant in rheumatology and, as opposed to radiological procedures that give morphological changes, scintigraphy gives functional and topographic information of metabolic character. Densitometry is used in diagnosing and monitoring the effects of treatment of bone metabolism illnesses. It is also important to note that capillaroscopy also plays a significant role in rheumatology. Arthroscopy, endoscopic diagnostic procedure is an overview of all big joints. During a diagnostic examination, it is possible to complete a biopsy of synovia, cartilage and bone, as well as endoscopic surgical intervention. EMNG gives significant data on the existence of damage in various parts of neuro-muscle system, character and presence of muscle lesion and PNS, activity of pathological process and dynamics of illness development, and it is also useful in evaluation of effectiveness of therapy and illness prognosis. (3,4,5,6)

1. INTRODUCTION
One of the mostly used radiographic methods in rheumatology, and also the oldest radiographic method in radiology in general, which is based on use of natural contrasts, is native radiography or regular radiography.
The first radiography was done by W.C. Roentgen on December 18, 1895, which finding was published on December 28, 1895.

Beside regular radiography, the following radiographies are also used in rheumatology: increasing radiography, radiography of low voltage, xeroradiography, conventional tomography, contact radiography, teleradiography, digital roentgen image.(1,2)

Radiographic methods with use of artificial contrasts: Artography and bursography, Mielo(radiculo)graphy, techniques of interceding radiology in musculoskeletal diseases, autoradiography.
The next method in rheumatology is ultrasound, method for visualization of soft tissue. The method allows overview during movement (dynamic ultrasound), which increases sensitivity during diagnostic and therapy procedures.

Development of diagnostics and treatment of rheumatoid arthritis

Objectives of research

To use methods of visualization and other sophisticated methods to monitor ability to evolve and severity in patients suffering from Rheumatoid arthritis.

Methods of work

One hundred and forty five patients suffering from RA were examined in Kosovo in the department of rheumatology of the Clinic for internal medicine in Prishtina. Individual visualizations and other sophisticated methods were not done on all 145 patients. Roentgen diagnostics were done at the Institute for radiology. Sonography was done at Orthopedic and cardiologic clinic – Prishtina. Computerized tomography at the CT department. EMR at VMA and other examinations at KBC clinics in Prishtina. Biopsy of syn-
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Oviva was done by a Polli-bickel needle (M. Ristić), and pathohistological examinations at the Institute for pathology of Faculty of medicine in Prishtina. With application of adequate statistical tests. Done in EXCEL program.

4. RESULTS OF RESEARCH

Results are presented in tables and graphs.

Table 1 shows a roentgen examination. Frequency of positive Rö examination is statistically significantly higher in the core group (hi-square=46.74, DF=1, p<0.001). Periarticular PIP swelling of joints is statistically significantly more frequent in the core group (hi-square=5.45, DF=1, p=0.020). Narrowing of inter-joint area is statistically more frequent in the core group (hi-square=29.52, DF=1, p<0.001). Silk-like osteoporosis is statistically more frequent in the core group (hi-square=87.12, DF=1, p<0.001). Initial erosions are statistically significantly more frequent in the core group (hi-square=34.94, DF=1, p<0.001). Outstanding erosions are statistically significantly more frequent in the core group (hi-square=9.32, DF=1, p=0.002). There is no statistically significant difference between the groups in terms of frequency of subancylosis (hi-square=1.72, DF=1, p=0.190). Changes on other joints are statistically significantly more frequent in the core group (hi-square=20.90, DF=1, p<0.001).

Table 2 shows Rö graphy of the lungs. It can be seen that lung TBC is frequent: active form in 14.5%, inactive form in 24.8%. Pleural adhesions are also frequent – 26.2%. Other findings including pneumonitis, pneumonitis, exudative pleurisy and bronchiectasis are less frequent.

Table 3 shows a sonographic examination of the joints. Sonographic changes were found generally in Table 3. Sonographic examination

<table>
<thead>
<tr>
<th>Pathological examination</th>
<th>Positive findings</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in synovia (growths, destruction)</td>
<td>36</td>
<td>92.3</td>
</tr>
<tr>
<td>Changes in cartilage (growths, destruction)</td>
<td>31</td>
<td>79.5</td>
</tr>
<tr>
<td>Changes in bones (erosive changes)</td>
<td>21</td>
<td>53.8</td>
</tr>
<tr>
<td>Changes in tissue around joint</td>
<td>29</td>
<td>74.4</td>
</tr>
</tbody>
</table>

36 examinees or 92.3%, in cartilage in 31 examinees or 79.5%, in periarticular tissue in 29 examinees or 74.4% and in bones in 31 examinees or 53.8%.

Table 4 shows EKG changes in patients suffering from RA. The most frequent were signs of pericarditis (18.6%). Branch blocks were found in 6.9% of patients, signs of endocarditis in 4.8%, coronary insufficiency in 4.1%, hypertrophy and dilatation of heart in 3.4% and other changes in 15.2%.

Table 5 shows heart sonography findings in patients suffering from RA. Valvulitis was found in

<table>
<thead>
<tr>
<th>Finding</th>
<th>Number of patients</th>
<th>% of 35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valvulitis</td>
<td>21</td>
<td>60.0</td>
</tr>
<tr>
<td>Pericarditis (dry)</td>
<td>33</td>
<td>94.3</td>
</tr>
</tbody>
</table>

60.0% of patients, and pericarditis in 94.3%.

Table 6 and graph 1 show biopsy of synovia (pathohistological examination). Biopsy was done

<table>
<thead>
<tr>
<th>Finding</th>
<th>Number of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical finding for RA synovitis</td>
<td>27</td>
<td>81.8</td>
</tr>
<tr>
<td>Non-specific synovitis</td>
<td>5</td>
<td>15.2</td>
</tr>
<tr>
<td>Normal findings</td>
<td>1</td>
<td>3.0</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td>100.0</td>
</tr>
</tbody>
</table>

In 33 patients with a Polli-Bickel's needle. Twenty seven patients (81.8%) had typical findings for synovitis, 5 patients (15.2%) had non-specific synovitis and 1 patient (3.0%) had normal findings.

Table 7 shows parameters of examination of synovia liquid, received by arthrocentesis. Of 48 patients, 39 (81.3%) had positive Ropes, phagocytes were found in 11 or 22.9%, one patient had an isolated staphylococcus. Twelve patients had a positive
W. Rose test, and 12 or 25.0% had findings which show immunological RA synovitis.

Table 8 shows use of other diagnostic methods. CT exam was positive in 93.8% examinees examined in this manner. Phonocardiograph examination was positive in 98% cases. Hemutological examinations were positive in 98% cases. Hematological changes were found by sophisticated and other functional examinations in 40.6%, pleuropulmonary changes in 31.9%, cardiovascular changes in 37.7%, eye changes in 14.5% and nerve changes in 31.9%.

5. DISCUSSION
Roentgen examination is still a very important diagnostic method for RA, because it offers valuable diagnostic and differentially diagnostic data. D. Mihajlovic offers special attention to these methods in a spectrum of classic and newest sophisticated diagnostic methods for RA. In our examinations, ribbon-like osteoporosis was found in 129 examinees or 89%. We also have a high percentage of narrowing of inter-joint area, swelling and initial erosions. This is typical of RA, although such a high percentage in our examinations maybe also speaks in the favor of other causes of osteoporosis which are very frequent in Kosovo, which requires additional research. In 1997, magistrate thesis of Z. Mirkovic turned attention to this possibility in Kosmet circumstances of all sorts of nutritional deficiency, especially of vitamin D and calcitum.

Our research shows high percentage of sonographic findings in patients suffering from RA. Various device and instrumental methods were used during work, beside the usual roentgen. Use of these methods diagnoses the presence of visceropathies and systematic manifestations of RA. Sometimes they are so frequent in Kosovo that there is often a question of whether RA exists without visceropathies, especially in Kosmet area. We should keep coincidences in mind, especially in Kosovo with a much expanded humane pathology as a whole. The main starting clinical criteria for differentiating between visceropathies and coincidences are those presented by D. Vukotic, and the key element is concordance or discordance between visceropathies of 1st level of activity of RA. To this statement we should also add the need for objective and exact diagnostics, which we used. Therefore, in 15 out of 16 patients we found a positive CT examination. With lung roentgen we found a series of changes on the lungs, high percentage of TBC, pneumonia, pneumonitis, pleural adhesions. L. Todorovic gave a significant contribution to changes in lungs. She found changes in lungs in 43.5% of patients suffering from RA. This says that lung changes are not only visceropathies of RA, but intercurrent infections on the level of low immuno-biological ability and bad material status of patients suffering from RA.

### Table 7. Examination of synovia liquid in patients suffering from RA

<table>
<thead>
<tr>
<th>Examination</th>
<th>Number of patients</th>
<th>% of 48 patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ropes +</td>
<td>39</td>
<td>81.3</td>
</tr>
<tr>
<td>Cytological findings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fagocytes</td>
<td>11</td>
<td>22.9</td>
</tr>
<tr>
<td>Ly neutroph.</td>
<td>41</td>
<td>85.4</td>
</tr>
<tr>
<td>Other cells</td>
<td>21</td>
<td>43.8</td>
</tr>
<tr>
<td>Culturally normal finding</td>
<td>Only in one found staphylococcus golden aureus (secondary infection in the field)</td>
<td>97.9</td>
</tr>
<tr>
<td>W Rose u synovia liquid</td>
<td>12</td>
<td>25.0</td>
</tr>
<tr>
<td>Other examinations (cell plasma and other)</td>
<td>13</td>
<td>27.1</td>
</tr>
</tbody>
</table>

### Table 8. Other diagnostic methods

<table>
<thead>
<tr>
<th>Methods</th>
<th>Number</th>
<th>Positive findings</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT</td>
<td>16</td>
<td>15</td>
<td>93.8</td>
</tr>
<tr>
<td>EMR</td>
<td>12</td>
<td>12</td>
<td>100.0</td>
</tr>
<tr>
<td>Phonocardiograph</td>
<td>49</td>
<td>48</td>
<td>98.0</td>
</tr>
<tr>
<td>Virusologic examinations (“Torlak”)</td>
<td>49</td>
<td>48</td>
<td>98.0</td>
</tr>
<tr>
<td>Hematological changes</td>
<td>28</td>
<td></td>
<td>40.6</td>
</tr>
<tr>
<td>Pleuropulmonary changes</td>
<td>22</td>
<td></td>
<td>31.9</td>
</tr>
<tr>
<td>Cardiovascular changes</td>
<td>26</td>
<td></td>
<td>37.7</td>
</tr>
<tr>
<td>Eye changes</td>
<td>10</td>
<td></td>
<td>14.5</td>
</tr>
<tr>
<td>Nerve changes</td>
<td>22</td>
<td></td>
<td>31.9</td>
</tr>
</tbody>
</table>
changes clinical in RA are not often certain to give a “rheumatoid heart”. Valvulitis is rarely described in literature. We found it in 21 out of 31 examinees or 60%, and we found pericarditis in 33 patients or 94.3%. We could consider this infectious Kosovo pathology, which needs to be validly proven in further examinations. Valvulitis is a consequence of carditis, which is described as rare and it is noticed that in local patients it is more frequent than as described by Nasonova and Astapenkova.(3,4,5,6,7)

In our research, of the 33 patients, 27 or 81.8% had typical synovitis, and only 1 or 3.0% had normal findings. Higher frequency of completed biopsies of synovia can be a characteristic of RA in Kosovo, but now positive from the aspect of top rheumatology. In this research, we found that 39 patients or 81.3% have positive Ropes (of 48 patients). Cytological examination speaks for synovitis in RA it can be seen that lymphocytes and neutrophiles dominate (in 41 out of 48 examinees or 85.4%). This speaks to the favor of outstanding chronic presence of RA, which is a characteristic of this illness in Kosmet circumstances. High percentage of positive MRI, CT examinations, phonocardiograph examination, virusological examinations and other sophisticated examination can be connected to Kosmet circumstances.(3,4,6,7,8,9)

6. CONCLUSION

Methods of visualization and other sophisticated methods prove high ability to evolve and severity of illness in patients suffering from RA in Kosovo. Methods of visualization and other sophisticated methods are irreplaceable in diagnostics and monitoring of ability to evolve of illness in patients suffering from RA, and they should be used whenever necessary.

High ability to evolve and severity of illness in patients suffering from RA in Kosovo should be sought in exogen and endogen factors.

REFERENCES


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