Clinical and hematological parameters in patients of Rheumatoid arthritis in a tertiary care hospital

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Objective: To assess the clinical and hematological parameters in patients of rheumatoid arthritis (RA).

Methodology: This cross sectional study was carried out in the Department of Rheumatology, Baqai Hospital, Karachi from November 2019 to February 2020. A total number of 111 rheumatoid arthritis patients of both genders were enrolled according to ACR/EULAR criteria 2019. A Questionnaire comprising of patient's medical history, sign and symptoms, biophysical and biochemical parameters including age, BMI, ESR, Hemoglobin, RA factor, Anti CCP and SGPT, morning stiffness, swelling of joints, redness at joints, joint pain and fatigue was filled. Data were collected from patients records and analyzed by independent sample t-test using SPSS version 18 with significance at p<0.05.

Results: Out of 111 rheumatic patients, 86(77.4%) were females and 25(22.5%) males with the mean age 47.8±13.63. The levels of ESR, Anti CCP, RA factor and SGPT were significantly increased in both genders. All patients exhibited low hemoglobin levels.

Conclusion: Rheumatoid arthritis are at high risk of anemia with liver dysfunction. It is suggested that treatment options in them should be examined carefully with consideration of the complete patient profile. (Rawal Med J 2012:46:45-47).

Keywords: Rheumatoid arthritis, liver disorder, low hemoglobin.

INTRODUCTION
Rheumatoid arthritis (RA) is an auto immune disease in which inflammation of the joints leading to severe deformity. Women are affected three times more often than men. By 2020 prevalence of arthritis will reach 18.2 % (60 millions). In Pakistan, prevalence of RA is upto 5.5%. A study from Karachi noticed 12.9% cases of RA out of 4900 and was more common in females. In Pakistan, ratio of arthritis cannot be predicted accurately due to where uneducated people exist.

As more women develop RA, they become more anemic due to menstruation or pregnancy, in addition to RA. Liver dysfunction was also found in arthritic patients with the predominantly raised levels of alkaline phosphatase. The aim of the present study was to assess the alteration in different physical and hematological parameters and their association with the disease activity in patients of RA.

METHODOLOGY
This cross-sectional study was carried out from Nov 2019 to Feb 2020 at Baqai Hospital, Karachi. A total number of 111 RA patients were enrolled according to ACR/EULAR classification criteria 2019. Patients of other autoimmune diseases, drowsy, psychiatric illnesses, pregnant females and patients with history of gynecological and obstetrical diseases were excluded from the study. Sample size was calculated to be 79.86 with 5.5% prevalence by open Epi formula but we have taken 111 patients to validate our study. A written consent was obtained by every participant.

A detailed questionnaire was filled by all patients. It comprised of patient's medical history, sign and symptoms, biophysical and biochemical parameters including age, BMI, ESR, Hemoglobin, RA factor, Anti CCP and SGPT, morning stiffness, swelling of joints, redness at joints, joint pain, joint infection and fatigue. Data was collected from patients records of clinical reports.

Statistical Analysis: Statistical analysis was
performed using SPSS version 18. All continuous variables were analyzed by independent sample T test. *p* < 0.05 was considered statistically significant.

**RESULTS**
Out of 111 patients, 86(77.4%) were females and 25(22.5%) males with age of 42.8±8.6 years and 54.2±6.35 years, respectively. The BMI levels in females was 25.3±0.6 kg/m² whereas in males was 22.0±0.5 kg/m² found significant (*p* < 0.05).

Laboratory findings are shown in Table 1. Out of 111 patients, morning stiffness affected 14(13.7%) males and 75(73.5%) females. Joint swelling, joint pain and fatigue were common features (Table 2).

| Table 1. Clinical parameters of Rheumatoid Arthritis. |
|--------------------------|--------------------------|--------------------------|--------------------------|
| **Clinical parameters** | **Female (n=86)** (mean±SEM) | **Male (n=25)** (mean±SEM) | **T-Test df=1 p-value** |
| Age (years) | 42.8±8.6 | 54.2±6.35 | *p* < 0.05 |
| BMI (kg/m²) | 25.3±0.6 | 22.0±0.5 | *p* < 0.05 |
| ESR (mm/1st hour) (0 – 25) | 63.0±2.7 | 61.0±2.4 | *p* > 0.05 |
| Hg(gm/dl) | 11.7±0.3 | 11.9±0.3 | *p* > 0.05 |
| Male (14.0-17.4) | | | |
| Female (12.0-16.0) | | | |
| Rheumatoid Factor IU/ml (<14) | 15.0±0.8 | 14.7±0.9 | *p* > 0.05 |
| Anti CCP (IU/ml) (>=5.0 positive) | 30.3±1.9 | 17.1±1.4 | *p* < 0.05 |
| SGPT(ALT) IU/m | 91.0±1.8 | 88.8±1.2 | *p* > 0.05 |
| Male (0-43) | | | |
| Female (0-36) | | | |
| Drug Therapy | Methotrexate/ Leflunomide | Methotrexate/ Leflunomide | |

Table 2. Physical symptoms of Rheumatoid Arthritis.

<table>
<thead>
<tr>
<th>Physical parameters</th>
<th>Positive</th>
<th>Male (n=25)</th>
<th>Female (n=86)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning stiffness</td>
<td>97(87.4%)</td>
<td>22(19.8%)</td>
<td>75(67.5%)</td>
</tr>
<tr>
<td>Swelling</td>
<td>69(62.2%)</td>
<td>15(13.5%)</td>
<td>54(48.6%)</td>
</tr>
<tr>
<td>Redness</td>
<td>50(45.0%)</td>
<td>12(10.8%)</td>
<td>38(34.2%)</td>
</tr>
<tr>
<td>Joint pain</td>
<td>89(80.2%)</td>
<td>17(15.3%)</td>
<td>72(64.8%)</td>
</tr>
<tr>
<td>Fatigue</td>
<td>98(88.2%)</td>
<td>20(18.0%)</td>
<td>78(70.2%)</td>
</tr>
<tr>
<td>Lumps</td>
<td>59(53.2%)</td>
<td>12(10.8%)</td>
<td>47(42.3%)</td>
</tr>
</tbody>
</table>

**DISCUSSION**
Rheumatoid arthritis is an inflammatory progressive disease with joint pain. In the present study, RA factor, Anti CCP and SGPT were greater in female when compared to males. RA had positive correlation with severity of an auto immune RA. Anti CCP is considered as predictive diagnostic tool in detection of RA at early stages. ESR levels can be greatly influenced by, for instance, infections, malignancies, abnormally shaped or sized red blood cells or serum protein concentrations. They also tend to be higher in females than in males.

In the present study (Table 1) levels of ESR in females was slightly higher than in males, as shown previously. Anemia, defined by the World Health Organization as a hemoglobin concentration below 12 g/dl in women and 13 g/dl in men, is common in people with arthritis.

It was observed that Hb was significantly lower in patients with high disease activity. In the present study, the levels of hemoglobin was low normal in females and male respectively indicate that both are at high risk of anemia. This might be due to iron deficiency, which is an important cause of anemia in arthritis patients. Although not proven, the upper GI complications associated with nonselective NSAID use, including ulceration, perforation, and bleeding, could contribute to iron deficiency anemia in arthritis patients using these drugs.

Many RA patients have increased the risk of gastrointestinal side effects and liver toxicity. Adverse reaction of this therapy on liver is not a positive sign to deal with risk factor and physical disability. Increase level of SGPT in both genders indicates hepatic toxicity which might be due to NSAIDS and DMARDS therapy in RA patients. There were certain limitations in this study like estimations of LFTs, CBC, with a large sample size which may reflect good association with disease activity, could not be done in our study.

**CONCLUSION**
Our data highlights the higher risk of anemia with the alterations in liver enzymes in patients with arthritis. The study suggests that treatment options in rheumatoid arthritis should be examined carefully with consideration of the complete patient profile.
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Conflict of Interest:
None declared

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