A STUDY OF HAEMATOLOGICAL MANIFESTATIONS OF SLE WITH SPECIAL REFERENCE TO DISEASE ACTIVITY

1. Introduction
Systemic lupus erythematosus is a remarkable and challenging disease. Its diversity of clinical features is matched by the complexity of the factors (genetic, hormonal, and environmental) that cause it, and the array of autoantibodies with which it is associated(1).

Systemic lupus erythematosus (SLE) is a prototype autoimmune disease characterized by a wide variety of clinical manifestations and presence of numerous autoantibodies resulting in organ and tissue damage(2). It mostly affecting young women with several manifestations on the human body including skin, joints, kidneys, nervous system, and serous membranes(3).

Hematological abnormalities are common in SLE. Worldwide studies have shown varied incidence of hematological manifestations in SLE patients. The Major manifestations of SLE are anemia, leucopenia, thrombocytopenia, and antiphospholipid syndrome (APS). Hematological abnormalities in SLE patients require early diagnosis, careful monitoring and prompt therapeutic intervention(2).

Since blood and blood vessels together contain more diverse number of antigens than any other organ in the body, it is only natural to expect hematological manifestations more common than others(4)(5). In one study done in South India done by Saidharan PK shown prevalence of hematological manifestations more common than others(4)(5). In one study done in South India done by Saidharan PK shown prevalence of hematological manifestations more common than others(4)(5). In one study done in South India done by Saidharan PK shown prevalence of hematological manifestations more common than others(4)(5). In one study done in South India done by Saidharan PK shown prevalence of hematological manifestations more common than others(4)(5). In one study done in South India done by Saidharan PK shown prevalence of hematological manifestations more common than others(4)(5). 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Out of the 106 patients in our study there was only 1 male. The reason for this is the other male patients in this study were excluded because of the Haemoglobinopathy. It was observed that the maximum age incidence was in between 20—<29 years (38.63%) followed by 30—<39 years (31.13%). Mean duration of illness was 2.92 years. With majority of the patients presented within 1 year of onset of disease. Among the clinical manifestations most common was Mucocutaneous manifestations (90.5%) followed by Renal Involvement (76.4%). Among the Mucocutaneous Manifestations most common was Hair loss (54.15%) followed by Photosensitivity (51.9%) of patients. Musculoskeletal Manifestations were seen in 42.4% of the patients while Neuropsychiatric Manifestations were seen in 32.7% of the patients. Lupus Head ache were present in 24.53% of the patients. Hepatomegaly was present in 14.14% and Splenomegaly was present in 8.33% of the patients.

Among the Haematological manifestations Anemia (Haemoglobin <12 mg/dl) was seen in 99 patients (93.4%) of the patients. Leucopenial Total leucocyte count <4000) was observed in 8 patients (7.55%). Thrombocytoepnia (Platlet count < 1,00,000) was observed in 7 patients (6.6%). Anemia of Chronic Diseases was the most common type of Anemia with (79.2%) followed by Iron deficiency Anemia (14.1%). Autoimmune Haemolytic Anemia was absorbed in 6.6% of the patients.

<table>
<thead>
<tr>
<th>HEMATOLOGICAL MANIFESTATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemoglobin (g/dl)</td>
</tr>
<tr>
<td>Total Leucocytes (cell/µl)</td>
</tr>
<tr>
<td>&gt; 11,000</td>
</tr>
<tr>
<td>MCV (fL)</td>
</tr>
<tr>
<td>MCH (pg)</td>
</tr>
<tr>
<td>MCHC (gm%)</td>
</tr>
<tr>
<td>ESR (mm/hr)</td>
</tr>
<tr>
<td>Anaemia</td>
</tr>
<tr>
<td>Leucopenia</td>
</tr>
<tr>
<td>Thrombocytopenia</td>
</tr>
</tbody>
</table>

There was a statistically signification negative correlation seen between SLEDAI and the Haemoglobin ($r$=-.33,$p=0.001$) (Figure 2), Total Leucocyte count ($r$ = - .228, $p = .0019$). There was also a significant Positive correlation seen between the SLEDAI and Serum ESR ($r$ = .266, $p = .006$), Serum Ferritin ($r$ = .209 $p = .032$). There was correlation seen between the SLEDAI and Serum CRP. There was a steady decrease in both Haemoglobin and Total Leucocyte count as the SLEDAI increase with a statistically significant Mean difference between the three Groups of SLEDAI ( ie No flare, Mild Flare and Severe Flare) and Haemoglobin($p=0.002$), Total Leucocyte count ($p = 0.018$). There is also a Statistically significant Mean difference between SLEDAI and Serum Ferritin (Fig 3) and ESR with $p$ value of 0.035 and 0.025 respectively. There was no statistically significant Mean difference between SLEDAI and the Serum CRP. Also Serum Ferritin was positively correlated with the ESR ($r =0.197$ $p =0.043$) (Fig 4) and there was no correlation between Serum Ferritin and CRP ($r = 0.085$ $p =0.388$). ANA positivity was present in 95.2% of patients dsDNA positivity was present in 28.3% of the patients. we also observed that Significant correlation seen between Anaemia and dsDNA ($p = 0.007$),anti nucleosome ($p = 0.004$), Anti Histone ( $p = 0.0024$), Anti Pm Scl ( $p = 0.013$),Anti ku ( $p = 0.012$).

Figure 1: Haematological Manifestations

4. Discussion
Hematological abnormalities are very common in systemic lupus erythematosus. Anaemia is found in approximately 50% of patients, with anaemia of chronic disease being the most common form. Impaired erythropoietin response and presence of antibodies against erythropoietin may contribute to the pathogenesis of this type of anaemia. Patients with autoimmune haemolytic anaemia usually belong to a distinct category, which is associated with anticardiolipin antibodies, thrombosis, thrombocytopenia and renal involvement, often in the context of secondary antiphospholipid syndrome. Finally, as recently suggested, auto antibodies, T lymphocytes and deregulation of the cytokines network can affect bone marrow erythropoiesis leading to anaemia (8).

It was observed that the maximum age incidence was in between 20—29 years (38.68%) in our Study which is in accordance with studies done by Agarwal et al (9), Santhanam et al (10), Saigal et al (11), Kishore et al (12) which showed the maximum prevalence was between 21—40 yrs.

**Table 1: Over all Comparison of various Clinical Studies with Other Studies**

<table>
<thead>
<tr>
<th>Clinical Manifestations</th>
<th>Our Study</th>
<th>Study (13)</th>
<th>Study (14)</th>
<th>Study (15)</th>
<th>Study (16)</th>
<th>Study (17)</th>
<th>Study (18)</th>
<th>Study (19)</th>
<th>Study (20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muco-cutaneous</td>
<td>92.5%</td>
<td>108.0%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Constitutional</td>
<td>61.3%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>72%</td>
<td>91%</td>
<td>-</td>
<td>-</td>
<td>81%</td>
</tr>
<tr>
<td>Musculo skeletal</td>
<td>42.4%</td>
<td>83.2%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Renal</td>
<td>76.4%</td>
<td>55%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>69%</td>
<td>44%</td>
<td>36%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Cardiac</td>
<td>17.9%</td>
<td>-</td>
<td>5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5.3%</td>
</tr>
<tr>
<td>Pulmonary</td>
<td>11.3%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6%</td>
</tr>
<tr>
<td>Neuro-Psychiatric</td>
<td>32.7%</td>
<td>-</td>
<td>12%</td>
<td>35%</td>
<td>6%</td>
<td>13%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

All variables are expressed in percentage.

In our study the prevalence of Muco-cutaneous manifestations, Renal and Neuropsychiatric manifestations were similar to the study done by Agarwal et al (9). The prevalence of anaemia in our study was 79.2% which was high compared to the studies done by Volgareli et al (21) and Shaik et al (20) which showed 37.1% and 40% respectively.

While studying the correlation between the Serum Ferritin and the Disease activity in our study we found the Serum Ferritin is Positively correlated with the SLEDAI which is similar to the studies done by Vandhana et al (22), Seyhan et al et al (23), Tripathi et al (24) Lim MK et al (25).

There was also positive correlation is seen between the SLEDAI and the ESR value is seen in our study which is in accordance with the studies done by Stojan G et al (7).

In our study we also found that there is no significant correlation was found between SLEDAI and the Serum CRP which is in accordance with studies done by Williams RC et al (26) Encoesss et al (27) Cengetic M (28).

We found that there is a positive correlation between the Serum Ferritin and Serum ESR while there is no significant correlation between the Serum Ferritin and Serum CRP. The above correlation signifies that in a case of in a case of SLE flare the serum Ferritin will in increase with a normal or near normal Serum CRP that may help to differentiate between the flare and infection.

We also found that there is a significant statistical difference between the three Groups of SLEDAI (ie No flare, Mild Flare and Severe Flare) and Haemoglobin, Total Leucocyte count, Serum ESR and Serum Ferritin.

Also there is a significant negative correlation Between the Haemoglobin, Total Leucocyte count and SLEDAI (considering SLEDAI as single variable).

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**REFERENCES**


