Abstract: Gouty arthritis is visualized to be very rare in Systemic Lupus Erythematosus. This is because only a few sporadic cases have been reported in literature studies. In our hospital only two cases with SLE and co-existent gouty arthritis were reported last year. This study analyzed the clinical and laboratory parameters of SLE patients with and without arthritis and compared them with healthy controls. Comparatively higher level of uric acid is identified in SLE patients with arthritis (p less than 0.05). The patients also have worsened renal function. Although the uric acid levels are higher in lupus arthritis patients, the incidence of gout is very low in SLE. The rarity of association can be due to the clinical difficulties in differentiating acute gouty arthritis from active lupus arthritis. Hence, Gouty arthritis should be included in the differential diagnosis of patients with SLE associated active arthritis as the treatment for the two conditions differs significantly.

Keyword: Gouty arthritis, Systemic Lupus Erythematosus, Lupus Arthritis, Uric Acid

INTRODUCTION:
The prevalence of Systemic Lupus Erythematosus among Indian population is 3 per 1,00,000. Although prevalence of the disease is relatively low, there is considerable disease associated morbidity and mortality among Indian population compared to western society. Indian cohorts are more predisposed to develop lupus associated arthritis as well as the patients exhibit a higher degree of resistance to therapy and recrudescence rate is also very high, making the condition much more complex. There are several studies in literature that pointed out gouty arthritis, being one of the complications in lupus patients.

The earlier study dates back to 1981 when Moidel and Good et al first identified a SLE patient with concurrent deposition of uric acid crystals over the joints(1). Since then many investigatory studies reported, signifies the importance of gouty arthritis in SLE(2,3,4). But the overall reports regarding co-exist gouty arthritis and lupus across the globe is very rare. The major reason for negative association between co-existence of the two conditions is probably due to underdiagnosis of gouty arthritis in lupus patients. Gout may not be suspected in a patient in whom arthritis is well attributed to established SLE. The activity of lupus is silent during acute attack of gouty arthritis. Lack of awareness of the possibility of gouty arthritis may prevent recognition of gout in many patients with SLE. It is often difficult clinically to differentiate, whether SLE associated arthritis is true lupus arthritis or a gouty arthritis. Detailed biochemical investigations are needed to differentiate these two conditions. But the risk for gouty arthritis in SLE patients is underestimated and so not investigated routinely. This gives the possible explanation for Indian cohorts being resistant and recrudescent to the conventional therapy for arthritis. The pathogenesis of lupus arthritis differs markedly from that of gouty arthritis Genetic, environmental or hormonal risk factors act as triggers that impede immunological tolerance that leads to antigen- antibody deposition, complement activation in lupus arthritis Metabolic or genetic risk factors leads to hyperuricemia, leads to monosodium urate crystal deposition and crystal induced gouty arthritis. Uric acid crystals enhance cytokine production that leads to inflammation.

The levels of cytokines will be suppressed by corticosteroid or prednisone therapy, and may therefore mask the symptoms of gout in patients with SLE. The clinical manifestation of gout is heralded by therapy for SLE and so clinicians actually miss the diagnosis of gout. Moreover the long term therapies for the two conditions markedly differ. So it is crucial to investigate for gouty arthritis in SLE associated active arthritis, else inappropriate therapy lands up in prolonged morbidity for the patient. This is a case control study done on the hospital based cohorts to evaluate the risk of gouty arthritis in SLE patients.

MATERIALS AND METHODS
Whole blood was collected from 40 lupus arthritis patients attending, Rheumatology OPD, RGGGH, Chennai as well as from 40 age & sex matched healthy population of the same geographical area. The clinical as well as biochemical parameter of lupus arthritis patients and healthy controls are provided in Table-1.

STATISTICAL ANALYSIS:
Distribution of uric acid, urea, creatinine among arthritis and healthy population were assessed. Correlation of uric acid with disease activity and other renal parameters were calculated using spearman correlation coefficient. A P value < 0.05 was considered as significant.
Uric acid levels were estimated in patients with lupus associated arthritis and healthy controls. There is comparatively higher level of uric acid (p<0.05) in lupus arthritis patients compared to healthy controls. The lupus arthritis patients were divided into two cohorts, cohort with elevated uric acid and cohort with normal uric acid levels. Uric acid level correlated with other renal parameters: POSITIVE CORRELATION BETWEEN URIC ACID & RENAL PARAMETERS IS NOTED AT BOTH NORMAL / HIGH LEVELS OF URIC ACID.

**RESULTS:**

<table>
<thead>
<tr>
<th></th>
<th>Lupus Arthritis</th>
<th>Healthy Controls</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (M/F)</td>
<td>2:38</td>
<td>3:27</td>
<td>-</td>
</tr>
<tr>
<td>Age in years</td>
<td>28.1±8.43</td>
<td>29.1±6.03</td>
<td>NS</td>
</tr>
<tr>
<td>Duration of disease in years</td>
<td>4.6±2.3</td>
<td>NA</td>
<td>-</td>
</tr>
<tr>
<td>Uric acid (mg/dL)</td>
<td>8.9±5.3</td>
<td>3.1±1.0</td>
<td>&lt;0.05-5</td>
</tr>
<tr>
<td>Lactate (mg/dL)</td>
<td>57.9±19.7</td>
<td>18.3±8.4</td>
<td>&lt;0.05-5</td>
</tr>
<tr>
<td>Creatinine (mg/dL)</td>
<td>2.1±0.8</td>
<td>0.6±0.2</td>
<td>&lt;0.05-5</td>
</tr>
</tbody>
</table>

There is positive correlation between uric acid and other renal parameters. Strong positive correlation of >0.8 is noted at normal uric acid levels, and the correlation is relatively weak at higher uric acid levels.

**DISCUSSION:**

The study is done to assess the risk of gouty arthritis in SLE patients. Many of the patients with lupus arthritis have markedly elevated uric acid levels, thus highlighting the possibility of gouty arthritis. The cohort of active arthritis patients with elevated uric acid level, have associated worsened renal function. So in vice versa, Worsened renal function in lupus patients will elevate the uric acid levels that predispose the patients to gouty arthritis. Also the risk of gouty arthritis is further enhanced by immunosuppressive therapy notoriously by cyclosporine(5). Nearly 43% of the patients on immunosuppressive therapy develop clinical manifestations of definite gout(6). Cyclosporine will cause reduction in uric acid clearance thus elevating the uric acid levels(7). The elevated uric acid crystals elicit inflammation by enhanced production of cytokines.

Cytokine assay in synovial fluid helps to identify the component cytokine responsible for inflammation. GMCSF, IL-8 and leukotriene B4, the monocyte derived cytokines are responsible for attracting neutrophils to inflamed joints(8,9,10). Interferon- is also responsible for elicitation of a non-specific inflammatory response. So there are multiple risk factors responsible for the pathogenesis of gouty arthritis in lupus patients. The assay of uric acid level is so crucial in lupus patients to rule out the risk of gouty arthritis. Also the long term elevated levels of uric acid in these patients not only predispose them to the attack of gouty arthritis but also to the development of cardiovascular disease, metabolic syndrome and hypertension owing to the paradoxical pro-oxidant property of uric acid.

**CONCLUSION:**

In summary, arthritis in lupus patients can be a true lupus associated arthritis or crystal induced arthritis (uric acid crystal deposition). The two conditions cannot be differentiated clinically. Hence all the lupus patients with active monoarticular arthritis should have their uric acid level estimated. Those with elevated uric acid levels should undergo arthrocentesis and synovial fluid examined for uric acid levels along with radiological investigations of the affected joint. This detailed investigation will confirm/ rule out the diagnosis of gouty arthritis, so that all active arthritis patients can receive appropriate therapy. This detailed biochemical investigation should be performed in all arthritis cases irrespective of the patient's age. This is crucial because, the long term therapy for gouty arthritis is significantly different from those of SLE induced active arthritis. Lupus arthritis patients require immunosuppressant that are of no way useful in crystal induced arthritis that require hypouricemic or uricosuric drugs. Misdiagnosis of type of arthritis leads to significantly increased morbidity and even mortality. Hence Gout should be given consideration in all lupus patients with acute monoarticular arthritis.

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*Figure 1: CORRELATION BETWEEN NORMAL URIC ACID AND CREATININE*

*Figure 2: CORRELATION BETWEEN ELEVATED URIC ACID AND CREATININE*

*Figure 3: CORRELATION BETWEEN NORMAL URIC ACID AND UREA*

*Figure 4: CORRELATION BETWEEN HIGH URIC ACID AND UREA*
REFERENCES:
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