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Original Research Article

Prevalence and Clinical Profile of Anaemia in SLE

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Abstract
Background: *SLE is the prototype of the autoimmune disease affecting predominantly women. Ninety percent of patients are women in the child bearing age. A number of studies have shown that haematological manifestations are common in SLE, of which anaemia is the most common. The cause of anaemia in SLE are multifactorial. The objective of this study was to estimate the prevalence and clinical profile of anaemia in SLE.*
Materials and Methods: *Our study was a descriptive type of hospital based cross sectional study.96 patients with SLE satisfying the inclusion criteria were included in the study. They were subjected to a detailed clinical examination and complete blood hemogram.*
Results: *Out of 96 patients taken up for the study, 47 patients (49%) had anaemia. Anaemia of chronic disease was the commonest type seen in 28.1% followed by iron deficiency in 10.4%.*
Conclusion: *Haematological manifestations are very common in SLE. Anaemia was present in 49% of patients. Anaemia of chronic disease was the predominant type followed by iron deficiency anaemia.*
Keywords: *SLE, SLEDAI.*

Background

Systemic Lupus Erythematosis (SLE) is the prototype of the autoimmune diseases affecting predominantly women in the ratio 9:1. SLE was first described in 1828[1].It is characterised by a multisystem organ involvement because of deregulation of self reactive B cells leading to autoantibody production, immune complex deposition and complement activation with tissue damage. It is important for physicians to be aware of the consequences of the disease and to improve the patient quality of life. The aim of treatment of SLE is to suppress disease activity which is reversible and also to prevent organ damage.

SLE affects predominantly women in their reproductive years. The median age of onset in India is 24.5 years[2]. Remissions and relapse characterise the disease.

The American College of Rheumatology has criteria for the classification of patients having SLE[3]. If a patient at any time in his or her medical history has any 4 of the 11 criteria documented, the diagnosis of SLE can be made with about 95% specificity and 85% sensitivity. A number of

validated indices are available for quantifying disease activity. The most popular indice is SLEDAI[4]. This help in formulating the overall treatment plan and in formulating and assessment of prognosis.

Anaemia is a common haematological manifestation seen in SLE. Anaemia in SLE may result from several mechanisms and more than one may contribute sometimes. Anaemia of chronic disease is the most common. But it may also be due to auto antibodies to red cells or impaired erythropoietin production by the kidneys. Anaemia may also be due to GI blood loss. Autoimmune haemolytic anaemia is also common in SLE and may be associated with anticardiolipin antibodies, thrombocytopenia, thrombosis often in the context of secondary APLA syndrome[5-7]. A primary bone marrow involvement leading to hypocellularity, fibrosis and bone marrow necrosis mediated by autoantibodies, immune complexes has also been postulated to be cause for anaemia in SLE[8].

Materials and Methods

The study was conducted in Department of Medicine, Government Medical College, Trivandrum. This was a hospital based cross-sectional study done over a period of 1 year. Sample size was calculated using the formula

$N=(Z\square)^2PQ$, $Z\square=1.96$, P=Proportion of anaemia in SLE=50% , Q=100-P=50%, D=20% OF P

$N=(Z\square)^2PQ/d^2 = (1.96)^2 X50X50/10^2 = 95$

In our study 96 patients with SLE satisfying the inclusion criteria was taken.

Inclusion Criteria

1. Patients above 18 years satisfying the American College of Rheumatology criteria for diagnosis of SLE.
2. Male and female patients included.

Exclusion Criteria

1. Patients with chronic liver disease.
2. Patients with blood loss.

Data collection was based on patients demography, symptoms and signs, ACR criteria for diagnosis of SLE and relevant lab tests. Anaemia was diagnosed based on haemoglobin levels (<13.5g/dl in males and <11.5g/dl in females).

Laboratory tests include

1. Blood routine including haemoglobin
2. Peripheral smear
3. Reticulocyte count
4. Platelet count
5. Red cell indices
6. Serum ferritin
7. LDH
8. Direct Coombs test
9. Renal function tests

Data was collected using a structured questionnaire. Proportion of anaemia was calculated as a percentage. SLE patients with and without anaemia were compared using Chi square test.

ACR/SLICC revised criteria for diagnosis of SLE

Acute/subacute cutaneous lupus rash	Upto 2 points
• Malar rash	2 points
• Subacute cutaneous lupus erythematosus(SLE) rash • Palpable purpura or urticarial vasculitis	1 points 1 points
• Photosensitivity	1 points
Discoid lupus erythematosus(DLE)rash or hypertrophic lupus rash	1 points
Non-scarring frank alopecia	1 points
Oral/nasal ulcers	1 points
Joint disease	1 points
Pleurisy and/or pericarditis	1 points
Psychosis and/or seizure and/or acute confusion	1 points
Kidney involvement	Upto 2 points
• Proteinuria ≥3+ or ≥500mg/day or urinary casts	1 points
• Biopsy-proven nephritis compatible with SLE	2 points
Hematologic	Upto 3 points
• WBC count <4000/mm^3 or lymphocyte count <1500/mm^3 on ≥2 occasions or WBC count <4000/mm^3 along with lymphocyte count <1500/mm^3 in one occasion	1 points
• Thrombocytopenia <100,000/mm^3	1 points
• Hemolytic anemia	1 points
Serologic tests	Upto 3 points
• Low titre positive ANA	1 points
• High titre FANA with homogenous or rim pattern	2 points
• Positive anti-ds DNA	2 points
• Positive anti-Sm	2 points
• Anti-phospholipid antibodies(aPLs)	1 points
• Low serum complement(C3 and/or C4 and/or CH50)	1 points

Results

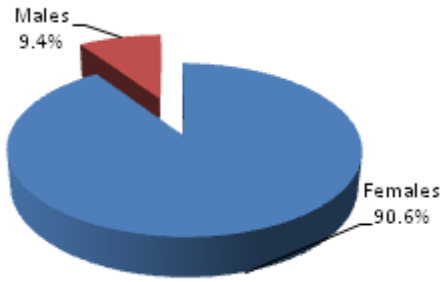
Sex Distribution

Out of 96 patients studied, 87 patients were females and 9 patients were males.

Table 1 Sex wise distribution of patients

Sex	No.of patients	Percent
Female	87	90.6
Male	9	9.4
Total	96	100.0

Figure 1 Sex wise distribution of patients



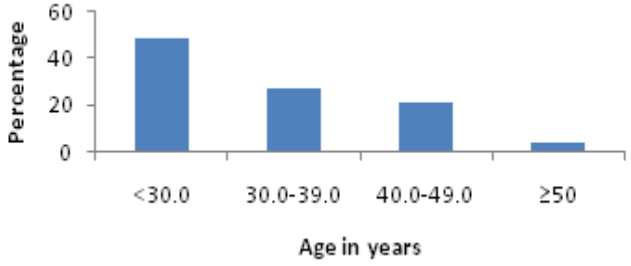
Age Distribution

Regarding age, 47 patients were below 30 years (49%) followed by 26 patients in the age group 30-39 years (27.1%) and 20 patients were in the age group 40-49(20.8%).

Table 2 Age wise distribution of patients

Age In Years	No.of patients	Percent
<30.0	47	49.0
30.0-39.0	26	27.1
40.0-49.0	20	20.8
≥50	3	3.1
Total	96	100.0

Fig 2 Age wise distribution of patients



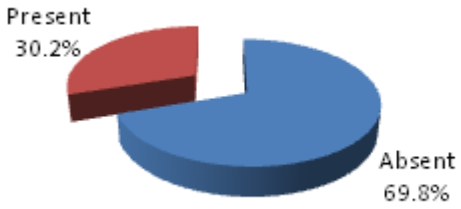
Patients with Anti Sm antibody positivity

Based on serology, all the 96 patients were ANA positive. As shown in fig 3, 29 patients were anti-Sm positive (30.2%)

Table 3 Anti Sm positivity

Sm	Frequency	Percent
Absent	67	69.8
Present	29	
Total	96	

Fig 3 Anti Sm positivity



Patients with anti Ds DNA positivity

All the patients studied were anti Ds DNA positive.

Table 4 Anti Ds DNA positivity

Ds DNA	Frequency	Percent
Present	96	100.0

Patients with Anticardiolipin Antibody positivity

Only 1 patient was anticardiolipin antibody positive as give in Table 5

Table 5 Anticardiolipin Antibody positivity

AC Antibody	Frequency	Percent
Absent	95	99.0
Present	1	1.0
Total	96	100.0

Peripheral smear findings of patients

As shown in table 5, majority of the patients had normochromic normocytic anemia(77.1%) followed by hypochromic microcytic anemia (16.6%), 6.3% of the patients had dimorphic peripheral smear findings.

Table 5 Peripheral smear findings

Peripheral smear	Frequency	Percent
Normochromic normocytic	74	77.1
Hypochromic microcytic	16	16.6
Dimorphic	6	6.3
Total	96	100.0

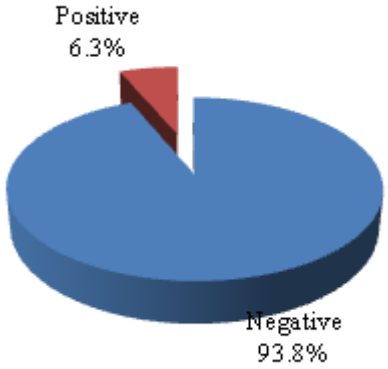
Patients with DCT positive

As shown in fig4,6.3% patients were direct Coombs positive.

Table 6 DCT

DCT	Frequency	Percent
Negative	90	93.8
Positive	6	6.3
Total	96	100.0

Fig 4 DCT positive



SLE patients with anemia

As shown in fig5, 47 out of 96 patients had anemia (49%).

Table 7 SLE patients with anemia

Anemia	Frequency	Percent
Absent	49	51.0
Present	47	49.0
Total	96	100.0

Fig 5 Occurrence of anaemia

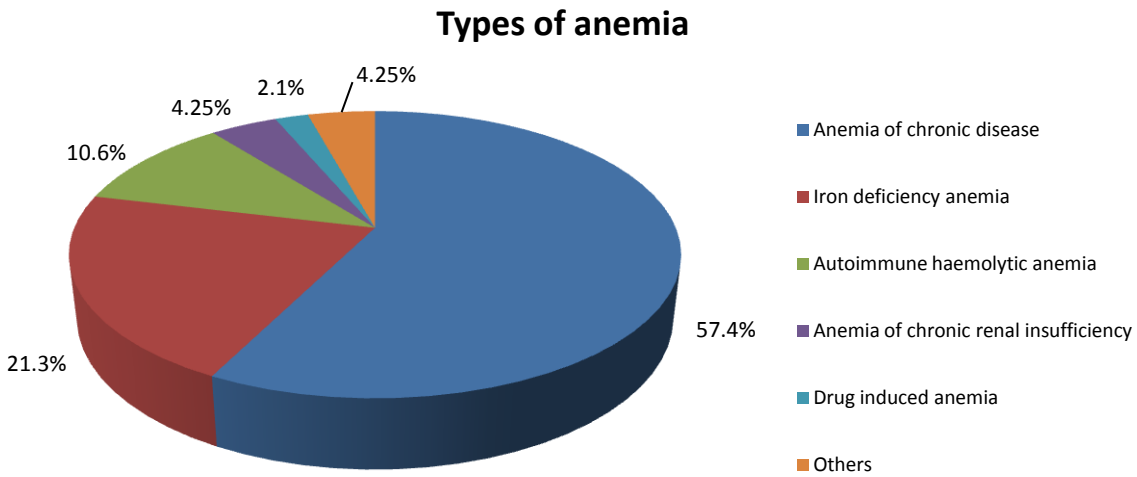
Types of anemia

The most commonest anaemia observed was anaemia of chronic disease (57.4%) followed by iron deficiency anaemia(21.3%)

Table 8 Types of anaemia

Type of anaemia	Frequency	Percent
Anemia of chronic disease	27	57.4
Iron deficiency anemia	10	21.3
Autoimmune haemolytic anemia	5	10.6
Anemia of chronic renal insufficiency	2	4.25
Drug induced anemia	1	2.1
Others	2	4.25
Total	47	100

Fig 6 Distribution based on types of anaemia



Discussion

SLE is an autoimmune disorder associated with other organ specific autoimmune disorders. 96 patients with SLE were included in our study. These patients were investigated for anaemia as well as the type of anaemia. Investigations included complete hemogram, serum ferritin, LDH, direct Coombs test and renal function tests.

Anaemia is a common finding in SLE. Anaemia in SLE may result from several mechanisms and more than one may be operative at any time. Out of the 96 patients,87 were females(90.6%) and the rest males(9.4%).

Regarding anaemia of chronic disease in SLE, the pathogenesis remains obscure.[9], Insufficient supply of hemopoetic cells with EPO along with their resistance to its proliferative action constitutes an important pathogenetic mechanism of anaemia of chronic disease [10,11], the presence of autoantibodies against EPO has been proposed as another possible cause of EPO deficiency [12]

Iron deficiency anaemia is common in SLE as a result of menorrhagia and increased GI blood loss caused by the use of NSAIDS and oral anticoagulants

Antibody induced damage of blood cells has been considered as a pathogenetic mechanism for cytopenias in SLE.

Among SLE the prevalence of antiphospholipid antibodies is high ranging from 12% to 30% for anticardiolipin and 15 to 34% for lupus anticoagulant. Several studies in SLE have demonstrated a significant correlation between ACL or Lupus anticoagulant and Coombs positive haemolytic anemia.[13]

Conclusion

The prevalence of anaemia is very common in SLE. Thus it is one of the most common haematological manifestations of SLE. The causes of anaemia in SLE is multifactorial. Anaemia of chronic disease was the most common type of anaemia in our study. This was followed by Iron deficiency anaemia and haemolytic anaemia.

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