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Hematological Manifestations of Systemic Lupus Erythematosus in a Tertiary Care Centre: A Hospital-Based Observational Study

[1]Dr.Tanbir Monzoor, Senior Resident, Department of Medicine, Nalbari Medical College and Hospital, Assam.

[2]Dr. Chiranjita Phukan, Professor, Department of Medicine, Nalbari Medical College and Hospital, Assam.

Corresponding Author: Dr. Tanbir Monzoor, Senior Resident, Department of Medicine, Nalbari Medical College and Hospital, Assam.

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Abstract

Background: Systemic Lupus Erythematosus (SLE) is a chronic autoimmune disorder with diverse clinical manifestations, including significant hematological abnormalities.

Objectives: To evaluate the hematological manifestations in SLE patients attending a tertiary care hospital.

Methods: A hospital-based observational study was conducted at Gauhati Medical College and Hospital from October 1, 2022, to September 30, 2023, including 55 patients diagnosed with SLE as per the 2019 EULAR/ACR criteria. Hematological profiles were analyzed along with correlations to clinical severity and outcomes.

Results: Hematological abnormalities were present in 81.8% of patients. Anemia was most common (72.7%), predominantly normocytic normochromic. Leukopenia (32.7%), lymphopenia (58.2%), and thrombocytopenia (30.9%) were also prevalent. Thrombocytopenia severity showed a significant correlation with disease activity (SLEDAI), low complement levels, elevated inflammatory markers, neuropsychiatric symptoms, and treatment outcomes ($p < 0.05$).

Conclusion: Hematological manifestations are frequent in SLE and are associated with disease activity and prognosis. Early identification and aggressive management of hematological abnormalities, especially thrombocytopenia, may improve outcomes.

Keywords: Systemic Lupus Erythematosus, Hematological Manifestations, Thrombocytopenia, Anemia, SLEDAI, Autoimmunity

Introduction

Systemic Lupus Erythematosus (SLE) is a complex, multisystem autoimmune disease predominantly affecting women of reproductive age. Hematological

abnormalities are among the earliest and most common manifestations of SLE and contribute significantly to morbidity and mortality. The present study aimed to investigate the spectrum of hematological manifestations in SLE patients and assess their clinical relevance and treatment outcomes.

Materials and Methods

Study Design and Setting

This hospital-based observational study was conducted at Gauhati Medical College and Hospital over a one-year period from October 1, 2022, to September 30, 2023.

Study Population

Fifty-five patients diagnosed with SLE based on the 2019 EULAR/ACR classification criteria were included.

Inclusion Criteria

- Age > 12 years
- Diagnosis of SLE as per 2019 EULAR/ACR criteria

Exclusion Criteria

- Age < 12 years
- Acute infection or trauma
- Blood transfusion within the last 3 months
- Chronic liver or kidney disease
- Current use of chemotherapeutic agents
- Pre-existing hematological malignancies or diseases confirmed via bone marrow biopsy
- Mixed connective tissue disease

Data Collection

Demographic data, clinical symptoms, and laboratory investigations (CBC, ANA profile, ESR, CRP, complement levels, Coombs test) were recorded. Disease activity was assessed using SLEDAI score. Data on medications, hospital outcomes, and 3-month follow-up were also analyzed.

Results

Demographics

The mean age was 27.36 ± 7.02 years (range 16–45 years). Majority were females (90.91%), with the 21–30 age group being the most affected (54.54%).

Autoantibody Profile

- ANA: 100%
- Anti-Smith: 83.6%
- Anti-dsDNA: 58.2%

Hematological Abnormalities

- **Total with abnormalities:** 45/55 (81.8%)
- **Anemia:** 40 patients (72.7%), with a mean Hb of 9.7 ± 2.7 g/dL
  - Anemia of chronic disease: 41.8%
  - Iron deficiency anemia: 18.18%
  - Hemolytic anemia: 9.09%
  - Megaloblastic anemia: 3.63%
  - Morphology:
    - Normocytic normochromic: 50.9%
    - Microcytic hypochromic: 18.18%
    - Macrocytic: 3.63%
- **Coombs Test:** Positive in 16.3%; autoimmune hemolytic anemia in 9.09%
- **Leukocyte Abnormalities**
  - Leukopenia: 32.72%
  - Leukocytosis: 9.09%
  - Neutropenia: 16.36%
  - Lymphopenia: 58.18%
- **Thrombocytopenia**
  - 17 patients (30.9%)
  - Severity:
    - Mild: 7
    - Moderate: 5
    - Severe: 5
  - Bleeding symptoms:

- Present in 12 (70.6%)
- Correlation with severity ($p < 0.05$)
- Severe group had major bleeds (e.g., ICH, epistaxis, gum bleeding)

- **Pancytopenia:** 12.7%
- **APS:** 1.81%

Correlation with Disease Activity

- Thrombocytopenia severity correlated significantly with:
  - High SLEDAI score
  - Low complement levels
  - Elevated ESR/CRP
  - Neuropsychiatric symptoms ($p < 0.05$)

Treatment and Follow-Up

- Medications:
  - Oral/IV glucocorticoids, hydroxychloroquine, IVIG, rituximab
  - Severe thrombocytopenia required more aggressive therapy ($p < 0.05$)
- Outcomes at 3 months (n=17 thrombocytopenia patients):
  - Complete response: 70.6%
  - Relapse: 17.6%
  - Mortality: 11.8% (all with severe thrombocytopenia)
  - Higher platelet counts at baseline associated with better prognosis ($p = 0.019$)

Discussion

This study highlights the high prevalence (81.8%) of hematological abnormalities in SLE, with anemia and thrombocytopenia being the most common. The findings are consistent with global literature suggesting hematologic involvement as a major component of disease burden. Importantly, the severity of thrombocytopenia showed a strong correlation with SLE disease activity markers and clinical complications, particularly bleeding and neuropsychiatric symptoms. This underlines the need for routine hematologic monitoring and tailored immunosuppressive therapy to mitigate risks.

Conclusion

Hematological abnormalities are frequent in SLE and provide important clues to disease activity and severity. Thrombocytopenia, especially in its moderate to severe forms, requires close monitoring and aggressive immunosuppression. Early identification and management of these manifestations can significantly influence patient outcomes.

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