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Pattern of Hematological Manifestations in Patients with Systemic Lupus Erythematosus Attending in a Tertiary Care Hospital

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Abstract

Background: Systemic lupus erythematosus is characterized by a wide range of symptoms, and hematological abnormalities are a typical complication (SLE). There are some that are immediately life-threatening and need immediate attention, and then there are those that require more careful thought. ***Objective:*** The purpose of this research was to better understand the hematological symptoms experienced by people with SLE. ***Method:*** This cross sectional study was carried out at tertiary hospital, Bangladesh from January 2021 to October 2022. Where a total of 100 Patients of SLE as diagnosed according to American college of Rheumatology (ACR) criteria were included in the study and patients with hematological problems for due to other diseases were excluded. ***Results:*** During the study, 21-25 years age group, 30% and 90% were female. Most common presenting complaints were arthralgia (82%) followed by malar rash(70%) and myalgia (66%). 25% had hypertension, 16% had autoimmune thyroids, 5% had DM, 40% had no history of previous. 80%were taken sterios, followed by 30% were taken Mycophenolate Mofetil, 25% were taken Cyclophosphamide, 9% were taken Methotrexate. In addition to that, Anemia was the most common hematological abnormality detected in 70% patients. Normocytic normochromic anemia (NNA) was the most common peripheral blood film (PBF) findings found in 36% of the patients followed by microcytic hypochromicanemia (MHA) 30%. A positive direct Coomb's test was found in 40% of the patients and antiphospholipid antibody (APLA) was positive in 20% of the patients. ***Conclusion:*** Patients with SLE often have haematological abnormalities. Differentiating haematological abnormalities as a symptom of SLE, a side effect of SLE therapy, or part of another blood dyscrasia is essential.

Keywords: Lupus erythematosus, or SLE, hematological abnormalities, autoimmune diseases.

INTRODUCTION

Lupus erythematosus, or SLE, is an autoimmune disease that causes damage to organs and cells via the action of autoantibodies that attach to specific tissues and immune complexes [1]. Ninety percent of patients are women of child- bearing years; persons of all sexes, all ages, and all ethnic groups are vulnerable [2]. In 1971, the American Rheumatism Association (the forerunner of the American College of Rheumatology; ACR) created the first formal categorization criteria for SLE [3]. In 1982, updated SLE categorization criteria were released, which included immunological testing to the previous criteria. In 1997, researchers updated the criterion to account for new information regarding how antiphospholipid (aPL) antibodies are linked to SLE [4]. Although the criteria are generally recognized and applied, only a few potential manifestations of SLE are covered. Eleven clinical criteria and six immunological criteria make up the Systemic Lupus International Collaborating Clinics (SLICC) SLE classification criteria. However, the SLICC criteria need both a clinical and an immunological criterion for SLE categorization, whereas the ACR criteria only require a clinical criterion [3,5]. Autoimmune haemolytic anemia (AIHA), leucopenia and thrombocytopenia are part of both ACR and SLICC criteria [6]. Patients with SLE

often have haematological abnormalities [7]. In some cases, haematological abnormalities are a direct result of the underlying pathophysiology of SLE, whereas in others, they may be present in individuals with SLE but are not an actual symptom of the disease [8]. Leucopenia is characterized as white blood cell counts of less than 4000/mm4 on two separate occasions according to the ACR and SLICC criteria for the categorization of SLE [9]. Along with the pathogenic mechanism of illness itself, various additional factors such as immunosuppressive medicines may contribute toward slow white cell count in these individuals [10]. Leucopenia, or low total white blood cell (WBC) count, includes a shortage of both granulocytes and lymphocytes, however in most cases; the granulocyte deficiency is more severe [11].

In this study our main goal is to evaluate the pattern of Hematological Manifestations in Patients with Systemic Lupus Erythematosus Attending in a Tertiary Care Hospital.

OBJECTIVE

To assess the pattern of Hematological Manifestations in Patients with Systemic Lupus Erythematosus Attending in a Tertiary Care Hospital.

METHODOLOGY

This cross sectional study was carried out at tertiary hospital, Bangladesh from January 2021 to October 2022. Where a total of 100 Patients of SLE as diagnosed according to American college of Rheumatology (ACR) criteria were included in the study and patients with hematological problems for due to other diseases were excluded. A structured questionnaire and necessary investigations were used as research instrument. Detailed history was collected in the structured questionnaire which includes demographic variables and co-morbidity. The form also included different physical signs found on examination ranging from general examination to systemic examinations. Data were presented by frequency and percentages and also diagram and charts. After compilation of data, the obtained data were checked, verified, edited and coded. The data were analysed and statistical evaluation was performed by SPSS version 20.0 program.

RESULTS

Table-1 shows demographic distribution of the patients where 21-25 years age group, 30%. Followed by 25% belong to 15-20 years age group, 20% belong to 26-30 years age group.

Table-1: Age distribution of the patients

Demographic group	**%**
15-20 years	25%
21-25 years	30%
26-30 years	20%
31-35 years	15%
36-40 years	10%
Gender	**%**
Male	10%
Female	90%

Table-2 shows clinical status of the patients where most common presenting complaints were arthralgia (82%) followed by malar rash (70%) and myalgia (66%).

Table-2: Clinical status of the patients

clinical status of the patients	**%**
arthralgia	82%
malar rash	70%
myalgia	66%
Fever	35%
Cough	23%
Seizer	20%
Discoid rash	16%
Oral ulcer	11%
Chest pain	10%
Vomiting	9%
Pedal edema	5%

*Multiple responses were noted

Table-3 shows co-morbidities of the patients 25% had hypertension, 16% had autoimmune thyroids, 5% had DM, 40% had no history of previous.

Table-3: Co-morbidities of the patients

Co-morbidities of the patients	%
Hypertension	25%
Autoimmune Thyroiditis	16%
Diabetes Mellitus, DM	5%
Other	14%
No history of previous	40%

Table-4 shows magnitude of the patient taking DMARDs where 80%were taken sterios, followed by 30% were taken Mycophenolate Mofetil, 25% were taken Cyclophosphamide, 9% were taken Methotrexate.

Table-4: Magnitude of the patient taking DMARDs

Magnitude of the patient taking DMARDs	%
Steroid	80%
Hydroxychlroroquine	30%
Cyclophosphamide	25%
Methotrexate	9%
Azathioprine	4%
Mycophenolate Mofetil	1%

*Multiple responses were noted

Figure-1 shows Pattern of hematological abnormalities where Anemia was the most common hematological abnormality detected in 70% patients.

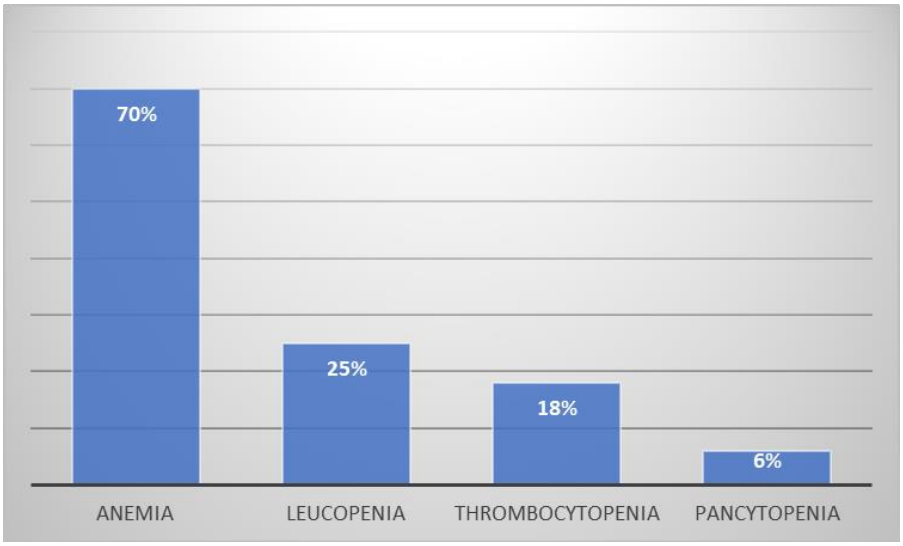

Figure-1: Pattern of hematological abnormalities

Table-5 shows Pattern of anemia where 35% had iron deficient anemia followed by 25% Anemia of chronic disease.

Table 5

Pattern of anemia	%
Autoimmune hemolytic anemia	10%
Iron deficiency anemia	35%
Anemia of chronic disease	25%

Figure-2 shows Peripheral Blood film findings where Normocytic normochromic anemia (NNA) was the most common peripheral blood film (PBF) findings found in 36% of the patients followed by microcytic hypochromicanemia (MHA) 30%.

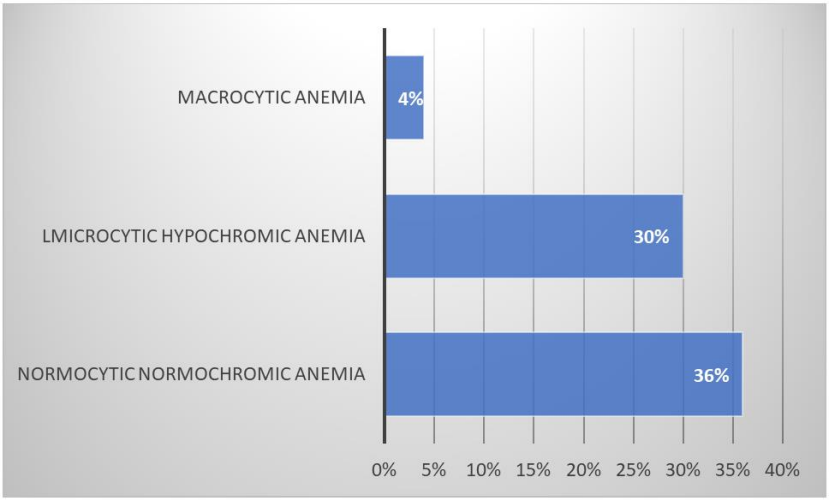

Figure-2: Peripheral Blood film findings

Table-6 shows Pattern of leukocyte abnormality where Leukocyte count was found >4000/cmm in 72% patients while leucopenia was found in 22% patients.

Table-6: Pattern of leukocyte abnormality

Pattern of leukocyte abnormality	%
Leukocyte count (>4000/cmm)	72%
Leukocyte count (<4000/cmm)	22%
Lymphopenia	15%
Neutropenia	12%
Both lymphopenia and neutropenia	11

*Multiple responses were noted

Table-7 shows Coomb's test and antiphospholipid antibody test where A positive direct Coomb's test was found in 40% of the patients and antiphospholipid antibody (APLA) was positive in 20% of the patients.

Table-7: Coomb's test and antiphospholipid antibody test

Coomb's test and antiphospholipid antibody test	%
Coomb's test	%
Positive	40%
Negative	60%
Antiphospholipid antibody (IgG) test	%
Positive	20%
Negative	80%

DISCUSSION

There was a female preponderance in the studied patients; females were 90% and males 10%. Male female ratio was 1:44. This is consistent with most of the studies [12]. Cameron *et al.*, has reported a male to female ratio of 1:8 to1: 14 in a series of adult patients [13]. The mean (±SD) age of the patients in this study was 24.86(±5.88) years [14]. Highest number of patients (31.5%) was in 21 to 25 years age group followed by 15 to 20 years of age. SLE is a disease of child bearing age [15]. The median age of onset of SLE is 24 years in a series reported by Malaviya AN [16].

The most common presenting complaints were arthralgia (82%) followed by malar rash(70%) and myalgia (66%.This is similar to some study done in India with large sample size (321), where the presenting problems were the arthralgia (76%) and then the fever (61.9%) [17]. In another study conducted at Chittagong Medical College Hospital by Md. Abdur Rauf *et al.*, [12] the most common presenting complaints were photosensitivity (84.2%)followed by fatigue (50%) and rash (45%). Fever (44%) was also a common presenting symptom with arthralgia (41%) [21]. Oral ulcer was found in 47.8% in our patients consistent with Malviya *et al.*, [16]. In a series of studies done by Wallace18 oral ulcers were present in 7-36% of cases [18].

Our study has documented a higher incidence of oral ulcers compared with western studies but the incidence is similar to that documented in the study from India. Malar rash was founding 70% of our

patients. This observation is a bit higher to the series described by Wallace DJ where the incidence was10-60% [18]. Overall the relative frequency of each of the major clinical features at presentations was similar to what has been documented in literature, except from those which were conducted with small sample size.

In the study 25% had hypertension, 16% had autoimmune thyroids, 5% had DM, 40% had no history of previous. In analysis of nine published series of SLE patients, prevalence rate of hypertension 12-49% has been described [17]. There is frequent association between hypertension and renal disease in SLE. In this study, out of 31 lupus nephritis patient, 20 patients were hypertensive.

The commonest criteria satisfied was anti ds-DNA (immunological) as evidenced by positivity in 100% cases.98.8% patient showed ANA positivity; hence 1.2% were ANA negative lupus. This is not a very common expected finding as ANA negative lupus is a rare clinical entity. ANA positivity is reported to in about 90-95% of cases [17]. Next to follow are the haematological abnormality (85.4%), arthralgia (80.9%), rash (74.2%), oral ulcer (47.8%) and renal involvement (30.9%). Haematological abnormalities were detected in higher percent of patients diagnosed to have SLE in this study consistent with Xu XM *et al.*, [19]. Aleem *et al.*, studied 624 SLE patients forhematological abnormalities of which hematological abnormalities were present in 516 (82.7 %) patients at the time of diagnosis [20]. Though there was such a high incidence of hematological features at presentation, only 4 patients presented primarily with symptom attributed to hematological abnormalities specially purpura.

Most common hematological abnormality was anemia. Various studies have shown a similar finding [21]. In a series of studies reviewed by BudMan anemia occurred in 57- 78% of patients with SLE18. Aleem *et al.*, [20] concluded of hematological abnormalities, anemia was the most common disorder present in 63% of patients followed by lymphopenia in 40.3%, leukopenia in 30.0%, thrombocytopenia in 10.9% and autoimmune haemolyticanemia (AIHA) in 4.6% patients [20]. Iron deficiency anemia (IDA), anemia of chronic disease (AOCD) and autoimmune hemolytic anemia (AIHA) are the common cause of anemia in SLE [20]. Iron deficiency has been diagnosed on the basis of hypochromicity on the peripheral smear mainly, along with some clinical features like picanail changes, glossitis and chelitis. Anemia of chronic disease on the basis of a normocytic and normochromic blood picture in the presence of negative Coomb's test and AIHA on the basis of positive Coomb's test and reticulocytosis. Further investigations to evaluate anemia such as iron studies, serum folate levels and bone marrow examinations has not been done due to financial constraints.

A positive direct Coomb's test was found in 40% of the patients and antiphospholipid antibody (APLA) was positive in 20% of the patients. However the incidence of AIHA in his study was less than 10%.21 Aleem *et al.*, found a positive Coombs' test was found in 80 (35.9%) of the 223 patients tested, and 29/624 (4.6%) patients developed autoimmune hemolytic anemia (AIHA) [20].

CONCLUSION

Patients with SLE often have haematological abnormalities. Differentiating haematological abnormalities as a symptom of SLE, a side effect of SLE therapy, or part of another blood dyscrasia is essential. The haematological symptoms of SLE are often associated with anemia. Also noticeable is a decrease in white blood cells (leucopenia) and platelets (thrombocytopenia). It is recommended that similar surveys be undertaken using up-to-date laboratory equipment, a larger sample size, and the exclusion of complicating factors to better define the true severity of the issue. Additionally, cohort studies should be performed to learn the natural history of the hematological manifestations and assess the impact of treatment measures.

REFERENCES

1. Kasper, D. L., Braunwald, E., Fauci, A. S., Hauser, S. L., Longo, D. L., & Jameson, J. L. (2008). Systemic lupus erythematosus. In: Harrison's principles of internal medicine, 17th ed. NewYork: McGraw-Hill Medical Publishing Division. 2075.
2. Lie, T. H., & Rothfield, N. F. (1972). An evaluation of the preliminary criteria for the diagnosis of systemic lupus erythematosus. *Arthritis & Rheumatism: Official Journal of the American College of Rheumatology*, *15*(5), 532-534.
3. Tan, E. M., Cohen, A. S., Fries, J. F., Masi, A. T., Mcshane, D. J., Rothfield, N. F., ... & Winchester, R. J. (1982). The 1982 revised criteria for the classification of systemic lupus erythematosus. *Arthritis & Rheumatism: Official Journal of the American College of Rheumatology*, *25*(11), 1271-1277.
4. Feletar, M., Ibañez, D., Urowitz, M. B., & Gladman, D. D. (2003). The impact of the 1997 update of the American College of Rheumatology revised criteria for the classification of systemic lupus erythematosus: what has been changed?. *Arthritis & Rheumatism: Official Journal of the American College of Rheumatology*, *48*(7), 2067-2069.
5. Petri, M., Orbai, A. M., Alarcón, G. S., Gordon, C., Merrill, J. T., Fortin, P. R., ... & Magder, L. S. (2012). Derivation and validation of the Systemic Lupus International Collaborating Clinics classification criteria for systemic lupus

erythematosus. *Arthritis & Rheumatism*, *64*(8), 2677-2686.
6. Katsanis, E., Hsu, E., Luke, K. H., & McKee, J. A. (1987). Systemic lupus erythematosus and sickle hemoglobinopathies: a report of two cases and review of the literature. *American journal of hematology*, *25*(2), 211-214.
7. Starkebaum, G., Price, T. H., Lee, M. Y., & Arend, W. P. (1978). Autoimmune neutropenia in systemic lupus erythematosus. *Arthritis & Rheumatism: Official Journal of the American College of Rheumatology*, *21*(5), 504-512.
8. Rivero, S. J., Díaz-Jouanen, E., & Alarcón-Segovia, D. (1978). Lymphopenia in systemic lupus erythematosus. *Arthritis & Rheumatism: Official Journal of the American College of Rheumatology*, *21*(3), 295-305.
9. Bhuyan, U. N., & Malaviya, A. N. (1978). Deficiency of T cells in bloodand tissues and severity of infections in systemic lupuserythematosus. *Indian J Med Res*, 67, 269–78.
10. Nossent, J. C., & Swaak, A. J. G. (1991). Prevalence and significance of haematological abnormalities in patients with systemic lupus erythematosus. *QJM: An International Journal of Medicine*, *80*(1), 605-612.
11. Wallace, D. J., Hahn, B. H., & Kapouzas, G. A. (2013). Hematological andLymphoid Abnomalities in SLE. In: DUBOIS' Lupuserythmatosus and Related Syndomes. *8th edn*. Philadelphia: Elsevier, 426–37.
12. Rouf, M. A., Uddin, A. A. M. R., Hoque, A. E., Ismail, M., Biswas, R. S. R., Alam, F., & Islam, M. S. (2014). Pattern of hematological manifestations in patients with systemic lupus erythematosus attending in a tertiary care hospital. *Chattagram Maa-O-Shishu Hospital Medical College Journal*, *13*(1), 49-53.
13. Manzi, M., Ramsay, G., & Star, K. V. (20030. Epidemiology of systemic lupus erythematosus. In Rheumatology, philadaelphia: Mosby. 3, 1295-96.
14. Cameron, J. S. (1999). Disease of the Month: Lupus Nephritis. *J. Am Soc Nephrol*, 10, 413-24.
15. Johnson, R. L., & Rubenstein, S. D. (2013). Anemia in the emergency department: evaluation and treatment. *Emergency medicine practice*, *15*(11), 1-5.
16. Malaviya, A. N., Singh, R. R., Kumar, A., De, A., & Aradhye, S. (1988). Systemic lupus erythematosus in northern India: a review of 329 cases. *The Journal of the Association of Physicians of India*, *36*(8), 476-484.
17. Kumar, A. (2002). Indian guidelines on the management of SLE. *J Indian Rheumatol Assoc*, *10*, 80-96.
18. Wallace, D. J. (1993). The clinical presentations of SLE, In Dubois'Lupus erythematosus, Wallace DJ and Hahn BH (eds) Philadelphia, Lea and Febiger, 4(33), 317-21.
19. Hu, X. M., Fan, Z. R., Zhou, S. Y., Wei, W., Zhu, B. H., & Cao, Y. F. (2004). Hematological abnormality and clinical characteristics in systemic lupus erythematosus. *Zhongguo shi yan xue ye xue za zhi*, *12*(2), 170-173.
20. Aleem, A., Al Arfaj, A. S., Khalil, N., & Alarfaj, H. (2014). Haematological abnormalities in systemic lupus erythematosus. *Acta Reumatol Port*, *39*(3), 236-41.