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Professional paper

CORRELATION OF CUTANEOUS MANIFESTATIONS AND AUTOIMMUNITY IN PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS (SLE)

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Abstract

Cutaneous Lupus Erythematosus (CLE) is an autoimmune heterogeneous disease with a diverse clinical picture and symptoms, which can manifest as an exclusively skin disease or manifest with involvement of vital organs (kidneys, skeletal system, joints, connective tissue, heart, lungs, etc.). About half of patients with lupus experience a characteristic rash called the malar or "butterfly" rash that can appear spontaneously or after sun exposure. Skin lesions are present in 70% - 80% of cases of CLE. [1,2,3]. Cutaneous involvement is the most common manifestation of systemic lupus erythematosus (SLE). The strongest risk factor for SLE is gender, with a female to male incidence ratio of 7 to 15:1 in adults and 3 to 4:1 in children [4]. SLE is four times more common in black women than in white women, and patients of African descent tend to develop the disease earlier and have higher mortality [5,6]. Purpose of the work is to assess the prevalence of lupus manifested by skin lesions and damage to other organs (kidneys, joints), which could contribute to early detection of the disease and taking appropriate measures to improve the quality of life of patients. We achieve this goal by monitoring laboratory parameters and the clinical picture of a group of patients diagnosed with Systemic Lupus Erythematosus (SLE) in a 12-month period every 3 months. The results obtained are processed with appropriate statistical methods and are presented in tables and graphs. The research concluded that all subjects manifested skin lesions of various types, and 15% also had symptoms of damage to other organs. After 12 months of treatment with appropriate therapy, all subjects showed improvements in the values of the examined laboratory parameters.

Keywords: skin lesions, autoimmune disease, rash

1. Introduction

The skin is the second most commonly affected organ after the joints, and skin lesions are the second most common manifestation of the disease. Systemic lupus erythematosus (SLE or lupus) is an autoimmune disease of the connective tissue that can affect any part of the body, in which the immune system attacks its own cells and tissues, leading to inflammation and tissue damage. SLE is a syndrome that represents a type 2 and type 3 hypersensitivity reaction in which immune complexes precipitate and cause an additional immune reaction with immune disorders, and the production of antinuclear antibodies (ANA). The word "lupus" comes from the Latin word "wolf" and refers to the characteristic "butterfly" rash on the face, which resembles the white stripes on the wolf's head. While the word "erythema" (from the Greek language) means red and refers to the redness of the skin rash. Several immunopathological disorders play a role in the development of Systemic Lupus Erythematosus (SLE), several immunopathogenic pathways play a role, and several pathogenic autoantibodies have been identified. The exact pathogenesis is still not well understood, and despite the understanding of the pathological underlying factors for SLE and the establishment of several classification criteria, in clinical practice the etiology and pathogenesis of SLE is still a subject of debate. The skin is the second most commonly affected organ system in systemic lupus erythematosus (SLE), with cutaneous manifestations occurring in 70% to 85% of individuals during the course

of the disease and as a presenting symptom in up to 25% of patients [7,8]. SLE (Systemic Lupus Erythematosus) and CLE (Cutan Lupus Erythematosus) are multifactorial diseases, which involve a complex interaction between genetic load and environmental exposures, such as ultraviolet radiation (UVR), drugs, pesticides and tobacco, or histone modifications, caused by these external factors, can cause activation of innate and adaptive immunity [9,10].Among the factors that most contribute to the occurrence of cutaneous lupus are: environment, UV radiation, viruses, duration of sun exposure, certain drugs (Quinidine, Procainamide, Sulfonamides, Isoniazid (INH), Tetracyclines, Streptomycin, Nitrofurantoin, Griseofulvin, tetracyclines,Gold salts, allopurinol, d-penicillamine, phenylbutazone, PAS, ibuprofen, oral contraceptives Increased association of HLA B7, HLA B8 and increased HLA DR3 in SLE induced by Drugs and others are the most important factors that cause cutaneous lupus erythematosus (cle-cutaneous lupus erythematosus) because it has been established that skin irradiation significantly alters the morphology and function of keratinocytes, causing the production of proinflammatory cytokines.[11]. Possible mechanisms that contribute to SLE are: structural similarity of the drug to the purine base of DNA, with subsequent cross-reactivity in the induction of antibody production to DNA, interaction of drugs with nuclear antigens that express a new determinant for evoking T-lymphocytes and help B-lymphocytes in the production of antibodies, inhibition of T-suppressor cell activity, with genetic predisposition through the immune response gene and through slow acetylation, increased apoptosis of keratinocytes, exposure of intracellular peptides at the epidermal surface, enhancing proinflammatory cytokines such as alpha interferon (IFN alpha) and alpha Tumor Necrosis TNF factor[12,13,14]. For the classification of systemic lupus in 1971, the American Rheumatism Association proposed the following criteria:

1. Skin eruption consistent with LE;
2. Renal disease;
3. Serositis and
4. Joint involvement.

The presence of 3 of the above 4 manifestations was considered for the classification of SLE.
Based on the clinical and specific histopathological findings of LE, Gilliam et al classified skin lesions (LE) into:

1) specific LE showing specific histopathological findings and
2) LE with nonspecific skin lesions in which histopathological evidence is not available [15-17].

2. Purpose of the work

To assess the prevalence of lupus manifested by skin lesions and damage to other organs (kidneys, joints), which could contribute to early detection of the disease and taking appropriate measures to improve the quality of life of patients.

3. Materials and methods

The study included 50 patients (15 were men and 35 women with an identical average age of 41.50±13.84 years). with the onset of the disease 6 months ago. All patients were followed in the period January 2022-December 2022. All patients were examined for Lupus according to clinical symptoms. All patients met the clinical and laboratory criteria of the American Rheumatology Association (1982). The following laboratory analyses were examined in all patients: C reactive protein (CRP), sediment, blood count (Er, Hb, Htc, Le), glycemia, urea, creatine, uric acid, total protein, microalbuminuria, albumins, electrolytes, iron (sFe), C3 and C4, antinuclear antibodies (ANA) to confirm the diagnosis of the disease. The results were

processed and presented in tables and graphs.Was to emphasize the importance of monitoring homocysteine as a potential biomarker in the prevention and management of cardiovascular

Table 1: Distribution of patients by gender and age

Gender	Number (%)	Mean Age ± SD
Female	35 (70%)	41.50 ± 13.84
Male	15 (30%)	41.50 ± 13.84

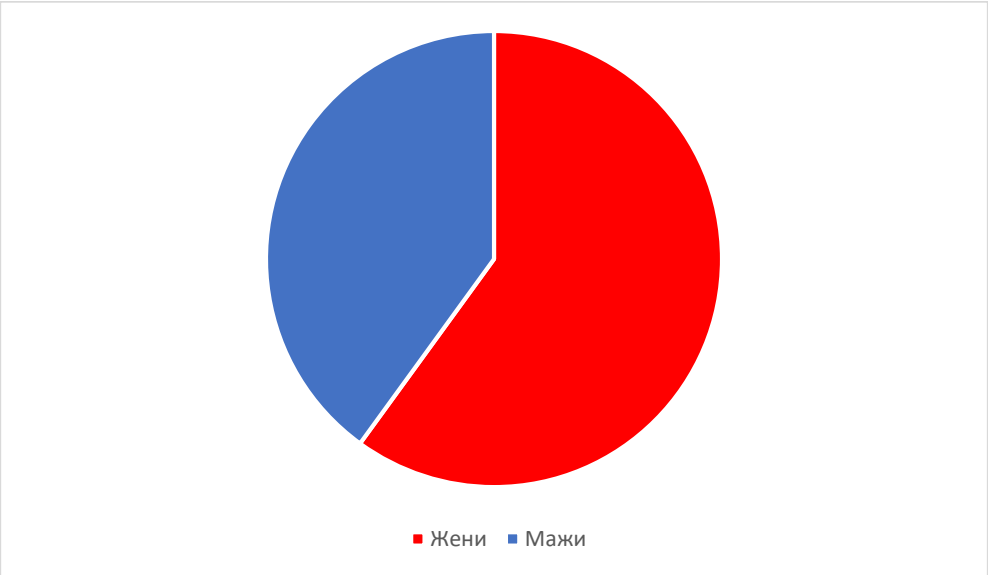

Table 2: Distribution of patients by disease

Gender	Number of Patients	% of Total	Symptoms
Female	25	50%	Malar rash, photosensitive dermatitis ("butterfly-shaped appearance")
Male	10	20%	Malar rash, photosensitive dermatitis ("butterfly-shaped appearance")
Female	5	10%	Generalized maculopapular rash
Male	2	4%	Generalized maculopapular rash
Female	5	10%	Skin and internal organ involvement (kidneys and joints)
Male	3	6%	Skin and internal organ involvement (kidneys and joints)
Total	**50**	**100%**	

Skin lesions were present in all patients, but with altered symptoms. Table 2 and Graph 2 show that 70% of patients had specific skin lesions with malar rash, photosensitive dermatitis ("butterfly appearance"), while in 14% the skin lesions manifested as a generalized maculopapular rash and in 16% the lesions manifested with symptoms and damage to other organs (kidneys and joints).

4. Statistical processing of the results

The results obtained from the patients examined with IRK, IRKT and the control group were statistically processed with arithmetic mean value, standard deviation X ± SD, with the student's "t" test, Mann-Whitney and Wilcoxon test.The results were processed with the SPSS V26 program.

5. Results

Test Parameters	**Women**	**Men**
SE mmol/30 min.	↑ 98.50±24.30	↑ ±16.00
Hb mmol/L	↓ 6.00±0.90	↓ 6.30±1.00
Er 10^{12}/L	↓ 3.20±0.50	↓ 3.50±0.90
Htc (r.v=0.37–0.40)	↓ 0.25±0.40	↓ 0.30±0.50
Thr 10^{9}/L	↓ 92.00±3.60	↓ 102.00±2.80
Neutrophils %	↓ 0.43.00±0.40	↓ 0.46.40±2.50
CRP mg/l	↑ 36.80±4.80	↑ 40.70±6.20
Gl mmol/l		5.90±0.70
sFe µmol/l	↓ 6.40±0.60	↓ 6.70±0.40
C3 (R.V=80–178 mg/dl)	↓ 48 mg/dl	↓ 52 mg/dl
C4 (R.V=12–42 mg/dl)	↓ <14 mg/l	↓ <16 mg/l

After 12 months of treatment according to accepted recommendations and the clinical picture, improvements are clearly seen in terms of the examined laboratory parameters (Table 4 and graphs 4 and 5).

6. Discussion

According to the data from the reviewed literature, about 90% of the patients are women, and in 50% of the cases the diagnosis was made at an age of less than 30 years. The distribution by gender and age of the respondents (75% women and 25% men at a mean age of 41.50±13.84 years) indicates that we have a representative sample of respondents. CLE is divided into lupus-specific and non-specific lesions based on clinical and histological characteristics. Further classification of lupus-specific skin disease is noted in Table 1 and includes acute CLE (ACLE), subacute CLE (SCLE) and chronic CLE (CCLE; Gilliam & Sontheimer, 1982). Clinical manifestations and prognosis differ between the different categories of CLE. Skin lesions were found in all patients at the first examination, as follows: in 70% of the patients specific skin lesions with a malar rash appeared, photosensitive dermatitis ("butterfly appearance"), while in 14% the skin lesions manifested as a generalized maculopapular rash and in 16% the lesions manifested with symptoms and damage to other organs (kidneys and joints). At the beginning of the study, all patients were tested for immunofluorescent antinuclear antibodies (ANA), which confirmed the diagnosis of the disease. The following laboratory analyses were also performed: C reactive protein (CRP), sediment, blood count (Er, Hb, Htc, Le), glycemia, urea, creatinine, uric acid, total protein, microalbuminuria, albumin, electrolytes, iron (sFe), C3 and C4. The results obtained showed abnormalities in favor of the diagnosis of SLE.During 12 months, the patients were treated with Analgesics, NSAIDs, Hydrochloro-quine, corticosteroids

and locally with corticosteroid ointments, in accordance with the clinical picture and the progress of the disease. All patients An appropriate hygiene and dietary regimen is recommended. Laboratory analyses were repeated 12 months after the start of the study. The results show improvement in laboratory parameters and the general clinical picture.

7. Conclusions

All subjects showed skin lesions of various types, and 15% also showed symptoms of damage to other organs. After 12 months of treatment with appropriate therapy, all subjects showed improvements in the values of the examined laboratory parameters.Early diagnosis and rational therapies are needed to halt the progression of cutaneous autoimmune diseases. A thorough understanding of skin lesions, as well as effective diagnosis and treatment in systemic lupus erythematosus (SLE), represents a complex process and research challenge that requires long-term commitment from experts, with the aim of eradicating autoimmune problems. Cutaneous manifestations of lupus can occur alone or in combination with SLE. Early recognition of chronic cutaneous lupus erythematosus allows for timely intervention and potential prevention of disability. Skin biopsy can be useful for diagnostic confirmation, although in most cases CLE is diagnosed based on clinical evaluation. Laboratory testing also helps identify patients at risk of progression to systemic disease. Optimal management of CLE requires a multidisciplinary approach, with collaboration between primary care, dermatologists, and rheumatologists, which contributes to the provision of high-quality health care and improved clinical outcomes.

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