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Cardiovascular events in patients with systemic lupus erythematosus

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ABSTRACT

Introduction: Cardiovascular involvement represents the leading cause of mortality in SLE patients. Its most common manifestations include pericarditis, valvular affections, conduction disorders, and arterial hypertension. Pulmonary hypertension and coronary arteritis are seen less often. Venous thrombosis directly related to SLE affects about 10% of SLE cases. Acceleration of atherosclerosis is very important and so are the ensuing cardiocerebral events, the most common of these being myocardial infarctions (MIs), cerebrovascular events, thromboembolic events (TEs), heart failure, and sudden death. We analyzed the frequency of cardiovascular events and their relationship to selected risk factors in a cohort of SLE patients followed in a single clinical center.

Methods: The studied population comprised 63 SLE patients (women: men = 53: 10, mean age 38.4 ± 12.7 years, mean disease duration 143 ± 82 months, BMI 24.74 ± 5.06, waist circumference 83.38 ± 16.58 cm), including 25 patients with lupus nephritis. Intima-media thickness (IMT) was assessed ultrasonographically in a standard manner. Of laboratory values, serum concentrations of total cholesterol (TC), triglycerides (TG), low-density lipoprotein (LDL), high-density lipoprotein (HDL), anti-ds-DNA, antinucleosomal antibodies (ANUC), complement components C3 and C4, and ENA antibodies were measured. Clinical disease activity was assessed using indices of activity and cumulative damage such as SLEDAI and SLICC. Screening for traditional cardiovascular risk factors was based on appropriate questionnaires. Detailed analysis was employed to calculate cumulative doses of glucocorticoids and other immunosuppressants and to evaluate the use of anticoagulants, antiaggregants, statins, and ACE inhibitors.

Results: A total of 21 (33%) patients had a history of cardiovascular event during the course of their SLE: there were 3 myocardial infarctions (4.7% of the entire population, 14% of all cardiovascular events), 8 cerebrovascular events (12.7%, resp. 38%), and 12 thromboembolic events (19%, resp. 57%). In two patients, two different manifestations of cardiovascular involvement were combined – cerebrovascular event and MI in one, cerebrovascular event and TE event in the other. Cardiovascular events correlated with obesity, waist and hip circumference, smoking, total cholesterol, LDL, TC/HDL ratio, and apolipoproteins A-1 and B.

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Borderline statistical significance was noted for disease activity, hsCRP, positivity of RNP and anticardiolipin antibodies, lupus anticoagulant ($p = 0.06$) and intima-media thickness ($p = 0.07$). Subgroups of patients with cardiovascular event and arterial hypertension were also analyzed in more detail.

Conclusion: In this article, we point to the high rate of cardiovascular events in SLE patients, thus confirming the need to pay appropriate attention to cardiovascular problems in the field of rheumatology.

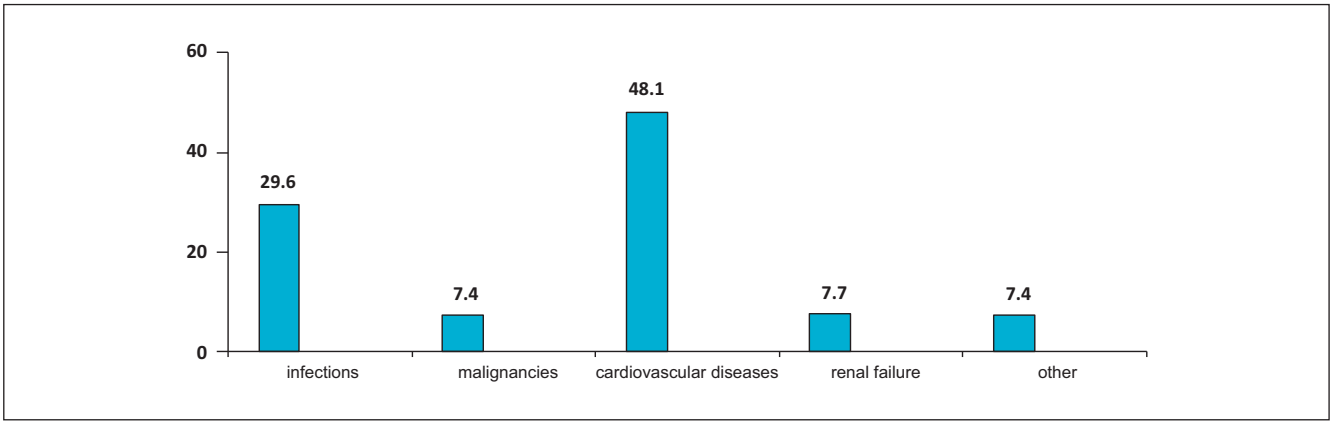
Introduction

Systemic lupus erythematosus (SLE) is an autoimmune inflammatory disease affecting mainly women of fertile age. It is characterized by hyperactivity of B-cells and by overproduction of autoantibodies without organ specificity, many of which contribute to the formation of immunocomplexes. Their deposition in tissues and blood vessels results in inflammatory organ impairment. The clinical picture of SLE is very variable. SLE is a highly heterogeneous disease, which can be divided into many subtypes defined clinically or based on laboratory findings; SLE can also overlap with many other diagnostic entities (mixed connective tissue disease, Sjögren's syndrome, and antiphospholipid syndrome). The disease course is characterized by a series of remissions and exacerbations. As for the laboratory findings in SLE, production of autoantibodies without organ specificity aimed at nuclear, cytoplasmic, and surface antigens of the patient's body is typical. Acute disease flares are usually accompanied by systemic signs, such as fever, fatigue and weight loss. The most common SLE manifestations include involvement of skin, joints, cardiovascular system, lungs, renal glomeruli, central nervous system or hematopoiesis. SLE can result in failure of the involved organs, severe forms of SLE thus being associated with significant mortality.

Cardiovascular mortality represents one of the leading causes of death in SLE patients [1] (Graph 1).

Cardiovascular manifestations of SLE can be divided into the following [2,3]: valvular and pericardial involvement, myocardial dysfunction, conduction disorders, accelerated atherosclerosis and thromboembolic disease. Pulmonary hypertension and coronary arteritis are seen less often [4]. Venous thrombosis directly related to SLE affects about 10% of SLE patients [5]. Cardiovascular involvement is present in up to 50% cases [6]. Despite its initially asymptomatic course, cardiovascular involvement is associated with increased morbidity and mortality of SLE patients. The most common SLE-related cardiovascular events include myocardial infarctions (MIs), cerebrovascular events, thromboembolic events (TEs), heart failure, and sudden death. Pathogenesis of cardiovascular impairment in SLE is variable. Traditional risk factors for atherosclerosis, inflammatory nature of autoimmune SLE, antibodies, acceleration of endothelial dysfunction, and – last but not least – SLE therapy all play a role here [7]. Specific antibodies cause oxidation of LDL particles, thus accentuating their atherogenic effect, or exert a negative influence on the character of physiologically protective HDL particles. Endothelial dysfunction within the vascular system ensues, increasing its vulnerability, affinity to lipoproteins and activity of enzymes accelerating the development of atherosclerosis [8].

We analyzed the frequency of cardiovascular events and their relationship to selected risk factors in a cohort of SLE patients followed in a single clinical center (Third Department



Graph 1 – Death causes in SLE patients, study with 5 years of follow-up (data shown as %, 1).