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Original article

Prognostic value of metabolic syndrome for the development of cardiovascular disease in a cohort of premenopausal women with systemic lupus erythematosus

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ABSTRACT

Background and objective: Systemic Lupus Erythematosus (SLE) is a chronic autoimmune disease of unknown etiology. In lupus patients there is an increased cardiovascular risk due to an accelerated atherogenesis. Furthermore, Metabolic Syndrome (MS) adds an independent risk for developing Cardiovascular Disease (CVD) in the population. Therefore, it is important to determine whether lupus patients have an increased risk of developing Cardiovascular Disease in the presence of MS.
To estimate the prognostic value of MS in the incidence of cardiovascular events in a cohort of premenopausal patients with SLE.
Methodology: Cohort study in 238 patients was carried out. Clinical, biochemical, dietetic and anthropometric evaluations were performed. Patients were classified according to the prevalence of MS in 2001. There was a patient follow-up from 2001 to 2008. In 2008, after studying the records, we obtained the "cases" (patients with CVD) and the "no cases" (patients without CVD).
Results: The basal prevalence of MS in the cohort was of 21.8% (ATPIII). The MS component with the highest prevalence in the population studied in 2001 was low HDL-Cholesterol (<50 mg/dL) with a prevalence of 55.0%. The cumulative incidence of CVD in the group with MS was 17.3% and in the group without MS it was 7.0% with a Relative Risk (RR) of 2.48 (1.12–5.46) and $p < 0.05$. In the multivariable analysis it was noted that MS is a predictive factor of CVD.
Conclusions: We observed the prognostic value of MS for an increased risk of cardiovascular damage in premenopausal patients with lupus.

Estimación del valor pronóstico del síndrome metabólico para el desarrollo de enfermedad cardiovascular en una cohorte de mujeres premenopaúsicas con lupus eritematoso sistémico

Palabras clave:
Lupus eritematoso sistémico
Síndrome metabólico
Resistencia a la insulina
Enfermedad cardiovascular

RESUMEN

Fundamento y objetivo: El Lupus eritematoso sistémico (LES) es una enfermedad crónica, autoinmune, de etiología desconocida que afecta principalmente a mujeres en edad reproductiva. En pacientes con lupus existe un elevado riesgo cardiovascular debido a un proceso aterogénico acelerado. Aunado a esto, el síndrome metabólico (SM) representa un riesgo independiente para el desarrollo de enfermedad cardiovascular (ECV) en población general.
Estimar el valor pronóstico del síndrome metabólico en la incidencia de eventos cardiovasculares en una cohorte de pacientes premenopáusicas con LEG.

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Metodología: Estudio de cohorte en 238 pacientes. Se realizaron evaluaciones clínicas, bioquímicas, dietéticas y antropométricas. Se clasificó a las pacientes con respecto a la presencia de síndrome metabólico en 2001. A partir del 2001 se inició seguimiento de las pacientes hasta el 2008 cuando a partir de la revisión de los expedientes se obtuvo a los "casos" (pacientes con enfermedad cardiovascular) y los "no casos" (pacientes sin enfermedad cardiovascular).
Resultados: La prevalencia basal de síndrome metabólico en la cohorte fue 21.8% (ATPIII). El componente del SM con mayor prevalencia en la población estudiada en el 2001 fue el colesterol-HDL bajo (<50 mg/dL) con una prevalencia de 55.0%. La incidencia acumulada de ECV en el grupo con síndrome metabólico (SM) fue de 17.3% y en el grupo sin SM fue de 7.0% con un riesgo relativo (RR) de 2.48 (1.12-5.46) y una $p < 0.05$. En el análisis multivariado se observó que el SM es un factor predictivo de enfermedad cardiovascular.
Conclusiones: El SM es un factor riesgo de daño cardiovascular en pacientes premenopáusicas con lupus.

Introduction

Systemic Lupus Erythematosus (SLE) is an inflammatory systematic disease of unknown etiology that mainly affects women in reproductive stage and has various clinical manifestations.[1] Patients with SLE have increased at least 5 times their risk of having Cardiovascular Disease, which is known to develop an accelerated atherogenesis process, independently of steroid treatment, which is another cause for mortality and injury in CVD.[2] Due to the high cardiovascular risk in patients with SLE it is important to identify traditional risk factors for CVD. There are several studies in patients with lupus that mention these factors, the most common being lipid profile, side effects of steroid-based treatment, hypertension, diabetes mellitus, a sedentary lifestyle and smoking; however, there is little information that highlights Metabolic Syndrome (MS) as a cardiovascular risk factor in these types of patients.[3]

The MS increases the risk of CVD and diabetes mellitus in the general population, with a decrease in survival mainly due to the increase in cardiovascular mortality.[4] Due to an increased risk of CVD in patients with SLE either by itself or by accelerated atherogenic process or other risk factors, and a further risk by the MS,[5] it is important to assess these two risk factors in order to implement preventive measures through dietary intervention and an increase in physical activity. Studies reveal that prevention could lead to improvement in the quality of life, disability as well as to lower economical, social and family costs. Decreasing CVD is one of the major challenges in public health.

It is known that traditional risk factors are not useful for predicting the development of CVD in autoimmune diseases[6,7]; MS translates a persistent inflammatory condition that is an inherent risk to the instability of the atheromatous plaque in the arterial lumen, which, coupled with the characteristics of the disease, may enhance the occurrence of such events.

For the development of this study we considered important to determine whether patients with MS had an increased incidence of cardiovascular events compared to those who do not have MS.

Methodology

A cohort study was performed between November 2001 and October 2008 in women with SLE who came regularly to the outpatient clinic of rheumatology at the National Institute of Medical Sciences and Nutrition Salvador Zubirán (INNSZ by its Spanish acronym) in Mexico City. The base population of this study consisted of 269 premenopausal patients with SLE evaluated in 2001 at the INNSZ. For various reasons, 31 patients (11.5%) could not participate further in the study (losses to follow-up, not localized, refusal to participate, pregnancy, or death); thus, the remaining 238 patients, with a follow-up of 88.5% of the original cohort were studied. The protocol was approved by the Institutional Committee of Human Biomedical Research of the INNSZ. The inclusion criteria used were: women, age ≥18, premenopausal women, who qualified as SLE (≥4 after American Rheumatology College criteria)[8] and who signed the (FALTA). Exclusion criteria were pregnancy, non-stabilized thyroid disease, acute physical stress (<3 months), amputation of limbs, generalized edema and/or recent liposuction (<1 year) and having fulfilled the ACR criteria for the diagnosis of antiphospholipid syndrome.

Procedure

All patients in 2001 (basal measurement) were given clinical, biochemical, dietetic and anthropometric evaluations to gather basal data. The diagnosis of MS was made at the time of the creation of the cohort and monitorization for development of CVD was performed in rheumatology consultations, ongoing reviews of medical records and income in the area of rheumatology at the hospital, as shown in Fig. 1. An additional measurement of changes in the basal status of MS was done in 2004.

Clinical rheumatologic evaluation

A clinical evaluation was performed in 2001 (basal measure), with emphasis on clinical manifestations, confirming the diagnosis, disease progression and medical treatment received. Additionally, an anamnesis was made focusing on traditional risk factors for cardiovascular disease. Clinical activity was evaluated using the index of disease activity MEX-SLEDAI (simplified and validated version from the Systemic Lupus Erythematosus Disease Activity Index) and the accumulated damage was measured using the Disease Damage Index SLICC/ACR (Systemic Lupus International Collaborating Clinics/American College of Rheumatology Damage Index for Systemic Lupus Erythematosus), and gynecological history, current medical treatment, duration and dose received (chloroquine, hydroxychloroquine, prednisone) and other treatments prescribed (for hypertension, cardiovascular disease and diabetes). There was also a physical assessment that included measurement of blood pressure. We reviewed the medical records of patients for cardiovascular events that occurred after the first assessment in 2001. The diseases included in the definition of cardiovascular disease were acute coronary disease (myocardial infarction), cerebrovascular event (stroke), arterial or venous thrombosis (pulmonary, renal or retinal), and deep vein thrombosis. The study protocol was approved by our institutional ethics committee.

Anthropometric evaluation

An anthropometric assessment was performed using a standardized process; measurements were made of height, weight, waist circumference, hip circumference and skinfolds (tricipital,