Nuclear Receptor Research
Vol. 6 (2019), Article ID 101440, 4 pages
doi:10.32527/2019/101440

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Opinion

SLICC 12 Criteria Are More Effectiveness than ACR 97 Score about Systemic Lupus Erythematosus Diagnosis

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Dates: Received 11 April 2019, Accepted 29 August 2019

Editor: Pallavi R. Devchand

Abstract. *Introduction:* Systemic lupus erythematosus (SLE) is a chronic, autoimmune disease wich variable symptoms affecting numerous organs and insidious onset of an unpredictable course, with episodes of activity and remission. The development of the disease is evaluated by a combination of clinical history, physical and laboratory tests to identify risk factors related to the stage or complications of the disease. The American College of Rheumatology (ACR 97) was the first to establish criteria for SLE classification. In 2012, The Systemic Lupus International Collaborating Clinics (SLICC 12) published a new set of criteria aimed at optimizing the classification of SLE. *Objectives:* Compare the criteria proposed by ACR 97 and SLICC 12 for the diagnosis of SLE and to gather information on clinical characteristics, diagnosis, and treatment. *Methodology:* Literature review, using the PubMed-NCBI database. The inclusion criteria were: articles published in the last five years; study in humans and selection by the direct relation with the selected theme. *Results:* SLICC 12 demonstrated a higher sensitivity diagnosed in reports compared with as ACR 97. *Conclusion:* We found that SLICC 12 is the classification criterion for SLE presenting the most excellent variety of laboratory, cutaneous, immunological and neuropsychiatric findings, allowing a better performance of the classification of patients with SLE and thus the early diagnosis of the disease.

Keywords: Systemic lupus erythematosus, *SLICC 12, ACR 97.*

1. Introduction

Systemic lupus erythematosus (SLE) is a chronic autoimmune inflammatory disease of unknown etiology that affects several organs slowly and progressively or more rapidly, presenting phases of activity and remission. Its development is associated with environmental, hormonal and genetic factors [1].

The estimated incidence ranges from 1.8 to 20 or more cases per 100,000 inhabitants per year. About 90% of the patients are females of reproductive age [12].

Joint involvement is the most frequent manifestation and patients with SLE are at increased risk for severe infections due to immunosuppression and due to disease conditions and treatment. Therefore, the development of the disease should be evaluated by the combination of anamnesis, physical and laboratory tests for the identification of risk factors related to the initial stage or complications [6].

The first criteria developed and validated to classify SLE were drawn up in 1971 and later reviewed by the American College of Rheumatology (ACR), and since then have been used as diagnostic criteria in which the patient must complete at least four (04) of the eleven (11) classification criteria.

In 2012, the SLICC group - Systemic Lupus International Collaborating Clinics proposed a new set of classification criteria, consisting of eleven (11) clinical criteria, six (6) immunological criteria and one alternative, where the patient must meet at least four) of seventeen (17) criteria [3].

Like other autoimmune diseases, these indices describe the general state of activity and response to therapy, e.g., use of traditional and newer immunosuppressive agents, glucocorticoids (GCs). These are the most important and first choice therapy in SLE. Despite the overall effectiveness of GCs, there are a significant number of SLE patients who do not respond well to GCs. Differences in nuclear glucocorticoid receptors (GRs) may be key in the development and therapeutic response of SLE. The answer depends on the expression of two glucocorticoid receptors, such as GRα and GRβ. However, further studies are needed to speculate the dose and dosing frequency of GCs in SLE patients to achieve the best response and prevent side effects [7].

Therefore, studies have shown that the classification criteria of SLICC 12 are more sensitive and contribute to an early diagnosis of the disease. Furthermore, since the later the patient's identification, the higher the damage caused to the body, further debilitating the patient. Here, we aimed to compare the criteria proposed by the ACR and the group of International Collaborative Clinical Lupus - SLICC criteria for the diagnosis of SLE and to gather information on the clinical characteristics, diagnosis, and treatment.

2. Methodology

Literature review, using the PubMed-NCBI database (free MEDLINE database - Online Medical Literature Search and Analysis System). The search for the material was carried out based on the following criteria: last five years, study in humans and the selected articles were according to the direct relation with the theme (reading the articles). The descriptors used in the electronic search were: "SLICC SLE Criteria."

3. Results and Discussion

We found 143 articles by the selection of the descriptors. Subsequently, only 87 articles were published in the last five years. Of these, 56 articles covered human studies. After reading the articles, we selected 08 articles according to the scheme below.

The criteria for SLE using ACR 97 requires that the patient present four of the eleven criteria, but the SLICC revised and validated those criteria in 2012 proposing that the patient meet four of the seventeen criteria being at least one clinical criterion and one criterion included in the diagnosis.

A study by Ungprasert *et al.* (2017), verified the incidence of SLE using the classification criteria of ACR 97 and SLICC 12 in a population of Minnesota. After evaluation and review, it was verified that 44 incident cases of SLE met the criteria of ACR 97 and 58 incident cases met the criteria for the classification of the SLICC 12. However, the 44 cases included by the ACR 97 criteria were served by the SLICC 12, that is, the SLICC 12 answered 14 more cases than the ACR 97 criteria. Showing that the incidence in identifying the SLE using the SLICC 12 was higher than the ARC 97, making it possible to discover the disease at the beginning of the appearance of the first criterion.

Through the use of the SLICC 12, the number of patients classified as SLE that previously were classified as incomplete lupus (undifferentiated connective tissue disease). Because they did not meet the criteria of ACR 97, according to Bortuluzzi *et al.* (2017), it is essential to develop more sensitive and specific criteria that are capable of identifying early stages of definite connective tissue disease in order to assist in the differentiation of stable, undifferentiated connective tissue disease in its early stage and its transition phase to the LES.

A study conducted in Sweden by Ighe *et al.* (2015) [9], showed that SLICC 12 classification criteria are more sensitive when diagnosing patients at the onset of the disease. The decisive point of classification by the SLICC 12 is the inclusion of an immunological criterion thus prohibiting the diagnosis only through clinical manifestations.

According to Inês *et al.* (2015) [10], patients with a shorter diagnosis time for SLE were more sensitive by the SLICC 12; however, this difference decreased with the course of the disease and was no longer significant for patients with more than 20 years of disease duration.

The classification of SLE through the SLICC 12 presented a higher sensitivity when compared to the criteria of the ACR 97, and statistically, there was no a significant difference as to the specificity. According to Fonseca *et al.* (2015) [8], SLICC 12 also presented a smaller error in diagnosis both at baseline and in follow-up in the first year. In this study, the low sensitivity of ACR 97 can be explained by the lack of specific immunological inclusion criteria. Moreover, finally, SLICC 12, besides being more sensitive and accurate, presented a greater variety of laboratory, cutaneous and neuropsychiatric findings. These authors have shown through their studies that the classification criteria of SLICC 12 are more sensitive and help in the early diagnosis of the disease, because of the later the identification, the higher the damage caused to the organism, further debilitating the patient.

In 2015, a clinical study was conducted in which 100 patients were studied in an open real-life setting to evaluate the performance of the classification criteria of both ACR 97 and SLICC 12. According to the results presented by Amezcua-Guerra (2015) [2] both had similarities in classifying SLE, but SLICC 12 stood out in clinical diagnosis as an isolated renal disease with circulating antibodies or the presence of erosive joint disease. There was less misclassification of SLE by ARC 97 showing that its criteria are more stable in a real uncontrolled scenario. According to Amezcua-Guerra (2015) [2], SLICC 12 allows the early

Table 1: Literature review for SLE classification.

Author	Local	Study Poplution	Method	Results
UNGPRASERT et al., 2017	USA	58 inpatients and outpatients in Olmsted, Minnesota, from January 1, 1993, to December 31, 2005.	A multicenter study in the database (medical records)	The incidence of SLE and the median of the manifestation of the first criteria were higher by SICS 12
BORTOLUZZI et al., 2017	Italy	329 patients from January 1, 1999, to December 31, 2013, from the Rheumatology Unit of the University Hospital of S. Anna Ferrara.	A study in the database (medical records)	SLICC 12 increased the number of patient's classifiable by 13.4%.
IGHE et al., 2015 [9]	Sweden	243 patients with SLE of Cl. of Rheumatology of Hosp. The University of Linköping, from September 2008 to January 2014.	A study in the database (medical records)	The SLICC 12 presented greater diagnostic sensitivity in 94%.
INÊS et al., 2015 [10]	Portugal	2055 patients with SLE from the Departments of Rheumatology of Portugal and Spain, from October 27, 2011, to June 30, 2013.	Study observational cross-sectional	The SLICC 12 criteria were more sensitive in the classification of SLE in 93.2% as compared to 85.6%; P <0.0001.
AMEZCUA-GUERRA et al., 2015 [2]	Mexico	100 patients.	Clinical study	The criteria of ACR 97 and SLICC 12 are similar to classify SLE in outpatient settings.
FONSECA et al., 2015 [8]	Brazil	173 patients of the Pediatric Rheumatology Unit of Inst. of Child Care and Pediatrics Martagão Gesteira / Univ. In the last 10 years.	Clinical study	The SLICC criteria presented 82% sensitivity and better diagnostic accuracy.
UROWITZ et al., 2014 [14]	Canada	768 patients from 24 SLICC centers from 10 countries in North America, Europe, and Asia.	A multicenter study in the database (medical records)	59% of patients had an increase in the number of ACR criteria over a 5-year period.
ANIC et al., 2014 [3]	Croatia	110 patients with SLE from the Rheumatology and Clinical Immunology Division of the University Hospital Center Rijeka, Croatia.	Cross-sectional study	Prevalence of SLICC 12 per patient.

diagnosis of SLE due to the clinical and immunological manifestations that the ACR 97 criteria do not have as the confirmation of lupus nephritis through biopsy.

Urowitz and collaborators in 2014 conducted a multi-center study in the database (medical records), showing an accumulation of ACR 97 criteria in the first five years using the SLE classification criteria. In this case, the ACR 97 was more efficient since the classification criteria by the SLICC 12 were not properly used.

Anic [3] demonstrate a correlation between SLEDAI - Systemic Lupus Erythematosus Disease Activity Index, which is used to measure disease activity index, and the new SLICC 12 for both active and inactive diseases by capturing the same clinical and laboratory findings, however when correlated with ACR 97 there was no correlation.

4. Conclusion

Through this study, we verified that SLICC 12 is the classification criteria for SLE that presents a greater variety of laboratory, cutaneous, immunological and neuropsychiatric findings, allowing a better classification performance. In the present study, the SLICC method 12 presented better diagnostic sensitivity in the first manifestations of the disease, which the adequate choice of the method assists in the early diagnosis of the disease, because of the later the identification, the higher the damage caused in the organism, further debilitating the patient.

Competing Interests

The authors declare no competing interests.

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