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Research Article

ACR, SLICC, EULAR: Which Sensitivities in the Diagnosis of Lupus?

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Abstract

Introduction: The American College of Rheumatology (ACR), the Systemic Lupus International Clinics (SLICC) group and the European Alliance of Associations for Rheumatology (EULAR) are three classifications for diagnosing systemic lupus erythematosus with different sensitivities and specificities.

Purpose of the study: Our purpose is to compare the sensitivity of these scores in the diagnosis of lupus to adopt the most relevant classification in our daily practice.

Materials and Methods: We conducted a prospective descriptive and analytical study including renal biopsies objectifying a lupus nephritis. These biopsies were performed in the nephrology department of the University hospital center Hassan II of Fes, from January 2010 to January 2021 to compare the sensitivity of these scores. Biopsies made during a relapse were excluded. Patient data was collected from records and computerized management software. Socio-demographic, clinical-biological and immunological data were processed by the SPSS software. The reference test of the calculation of sensitivity considered the decision of the medical staff, which is a daily meeting in the nephrology department, it aims to discuss the files of patients hospitalized and seen during night shift by doctors in training. This meeting is held under the aegis of four professors of nephrology, two of them are associate professors and two assistants. The decision of the medical staff to define lupus patients is based on a bundle of clinical biological, immunological, and pathological arguments.

Results Achieved: We collected 183 patients with an average age of 38.4 years with a standard deviation of 12.9 [17-76 years]. One hundred and sixty-seven (167) patients (91.3%) of the sample studied validate 4 out of 11 criteria of the ACR, with a sensitivity of 97%. For SLICC, 163 patients (89%) meet 4 out of 17 criteria, compared to 155 patients (84.7%) for EULAR. Thus, the sensitivity is 97% for the ACR, 96% for the SLICC and 93% for the EULAR classification with positive predictive values of 87.7%, 86.3% and 89% respectively.

The changes made by SLICC, and EULAR classification allowed to obtain 90 patients (49.2%) and 126 patients (68.9%) meeting the joint criterion respectively compared to 37 (20.2%) only for ACR. Following these same changes, 35 patients (19.1%) meet the neurological criterion of SLICC compared to 25 (13.7%) for ACR and EULAR.

Conclusion: The EULAR classification loses its sensitivity but gains its predictive value.

Keywords: Lupus; ACR; SLICC; EULAR; Sensitivity

Abbreviations

ACR: American College of Rheumatology; SLICC: Systemic Lupus International Clinics; EULAR: European Alliance of Associations for Rheumatology; ISN: International Society of Nephrology; RPS: Renal Pathology Society Classes

Introduction

- Systemic lupus erythematosus (SLE) is a multiorgan disease with protean manifestations. Because SLE is uncommon and characterized by clinical and immunological heterogeneity, its diagnosis can be a considerable challenge especially at the early stages of SLE [1].
- Patients with SLE display a wide spectrum of clinical and serological findings that can mislead and delay the diagnosis. Diagnostic criteria have not been developed yet, whereas several sets of classification criteria are available; however, none of them has 100% sensitivity and 100% specificity [2].
- The first criteria were developed in 1971 by the American Rheumatism Association [3] and revised by the American College of Rheumatology (ACR) in 1982 and again in 1997.
- This classification requires the presence of 4 out of 11 criteria to make the diagnosis of lupus.
- The Systemic Lupus International Clinics (SLICC) group established criteria giving rise to the SLICC classification in 2012 [4] requiring the presence of at least 4 criteria including at least 1 clinical criterion and 1 biological criterion or histology of lupus glomerulonephritis with positive antinuclear antibodies (ANA) and/or native DNA antibodies.
- This classification criteria were derived from a set of 702 expert-rated patient scenarios. Recursive partitioning was used to derive an initial rule that was simplified and refined based on SLICC physician consensus. The SLICC group validated the classification criteria in a new validation sample of 690 new expert-rated patient scenarios [5].
- Finally, the European League against Rheumatism implemented a new classification in 2019 : the ELULAR. It has applied the following techniques: nominal groups, Delphi surveys for prioritisation, small group discussion, systematic literature review and two Delphi rounds to obtain agreement. The panel included rheumatologists, internists, dermatologists, a nephrologist and an expert related to national research agencies. The level of evidence and grading of recommendations were determined according to the Levels of Evidence and Grades of Recommendations of the Oxford Centre for Evidence-Based Medicine [6].
- It uses positive antinuclear antibodies (ANA) as an entry criterion and 10 items on the side, rated from 2 (for delirium, non-infectious fever and anti-phospholipid antibodies) to 10 (for class III or IV lupic nephritis).
- The aim of our study is to compare the sensitivity of these scores in the diagnosis of lupus in order to adopt the most relevant classification in our daily practice.

Materials and Methods

We conducted a prospective descriptive and analytical study including renal biopsies objectifying a lupus nephritis. These biopsies were performed in the nephrology department of the University hospital center Hassan II of Fes, from January 2010 to January 2021 to compare the sensitivity of these scores. Biopsies made during a relapse were excluded. Patient data was collected from records and computerized management software. Socio-demographic, clinical-biological and immunological data were processed by the SPSS software. The reference test of the calculation of sensitivity considered the decision of the medical staff, which is a daily meeting in the nephrology department, it aims to discuss the files of patients hospitalized and seen during the night shift by doctors in training. This meeting is held under the aegis of four professors of nephrology, two of them are associate professors and two are assistants. The decision of the medical staff to define lupus patients is based on a bundle of clinical biological, immunological, and pathological arguments.

Results and Discussion

We collected 183 patients with an average age of 38.4 years with a standard deviation of 12.9 years [17-76 years]. One hundred and sixty-seven (167) patients (91.3%) of the sample studied validate 4 out of 11 criteria of the ACR, with a sensitivity of 97%. Concerning the SLICC, 163 patients (89%) meet 4 out of 17 criteria, compared to 155 patients (84.7%) for EULAR. Thus, the sensitivity is 96% for the SLICC against 93% for the ERULAR.

The modifications made by the EULAR and the SLICC concerning the joint and neurological criterion [7] allowed to obtain 126 patients (68.9%) and 90 patients (49.2%) meeting the joint criterion respectively compared to 37 (20.2%) for the ACR. Following these same changes, 35 patients (19.1%) meet the neurological criterion of SLICC compared to 25 (13.7%) only for ACR and EULAR.

The first difference between ACR, EULAR and the SLICC that made it possible to obtain these results is that the latter is no longer limited to synovitis as is the case for the ACR, but now it includes arthralgia of more than two joints. The EULAR does not limit the number of articulations and does not require the presence of inflammatory signs.

The second difference concerns the neurological criterion. It has been enriched in the SLICC including other manifestations such as the damage of the cranial nerves or multiple mononeuritis, however the EULAR has kept the 2 criteria of the ACR (convulsion, psychosis) and has added only one criterion which is delirium.

However, despite these differences, the sensitivity of the ACR, SLICC is higher than the EULAR, it is respectively of the order of 97%, 96% and 93% but with predictive values of 87.7%, 86.3% and 89% respectively, which suggests that the EULAR is certainly less sensitive but more specific.

	ACR	SLICC	EULAR
Sensibilité	97 %	96 %	93%
VPP	87.7 %	86.3%	89%

Table 1: Sensitivities and VPP of the 3 scores obtained in our series.

The other changes proposed by the SLICC and the EULAR did not have an impact in our series despite the richness of the skin criteria in these 2 classifications compared to that of the ACR, since they are grouped into items and are not criteria in their own right.

Although the immunological criteria are no longer grouped in the classification of SLICC and EULAR, this modification did not have an obvious repercussion in our study since the immunological assessment carried out by our patients focuses mainly on the title of the AAN, anti-DNA and complement because of lack of means.

Our results partially join the validity study of the 3 scores where the sensitivity is 96% for the ACR, 96% for the ELULAR and 94% for the SLICC. However, our results are opposed, on the one hand, to those obtained by the cohort conducted by the pediatric departments of the Faculty of Medicine of Ankara, Kayseri and Istanbul [8] having included 262 children in three different centers, it objected that the SLICC has a better sensitivity to make the diagnosis of lupus which is of the order of 95.4%, however, the ACR and the EULAR have a lower sensitivity, 68.7% and 91.6% respectively for each one.

On the other hand, it also opposes the multicenter study conducted in Oman [9] which included 113 children and concluded that the EULAR is more sensitive, its sensitivity is of the order of 81% in this study compared to the ACR and the SLICC whose sensitivities are 49% and 76% respectively.

Study	Description	ACR´s Sensitivity	SLICC´s Sensitivity	EULAR´s Sensitivity
Our study	Retrospective descriptive et analytique N = 183	97%	96%	93%
Validity study		96%	94%	96%
Pediatric departments of the Faculty of Medicine of Ankara, Kayseri and Istanbul	Retrospective N = 262	68,7%	95,4%	91.6%
Multicenter study conducted in Oman	Retrospective N = 113	49%	76%	81%

Table 2: Comparison of the sensitivity of different studies.

Conclusion

Considering these results, we conclude that despite a loss of sensitivity of the EULAR, it gains in positive predictive value, it will allow us to treat our patients suffering from LED with immunosuppressants with less fear of their side effects due to the lower rate of false positives proposed by the EULAR.

For a better study of the performance of these 3 classifications, more patients should be included in the study, a calculation of sensitivity at different stages of lupus follow-up should be considered, the application of objective criteria as gold standard, and the comparison of specificities since it is more performed to determine performance of classifications.

Conflicts of Interest

I declare that I have no conflict of interest.

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