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SYSTEMIC LUPUS ERYTHEMATOSUS: PREVALENCE OF IMMUNOLOGICAL MARKERS AND EXPERIENCE OF THE NATIONAL REFERENCE LABORATORY OF THE SHEIKH KHALIFA INTERNATIONAL HOSPITAL

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ABSTRACT

Systemic Lupus Erythematosus (SLE) is a serious and currently incurable autoimmune disease. With an insidious onset and unpredictable course, SLE is characterized by a variety of clinical manifestations, and a broad autoantibody profile that makes it a great diagnostic challenge, especially at a very early stage of the disease. The diagnosis of SLE is clinical, supported by serological tests. In addition, no isolated clinical or biological parameter can confirm the diagnosis, hence the interest of the classification criteria. Through a retrospective study conducted within the National Reference Laboratory (LNR) of the Cheikh Khalifa International University Hospital in Casablanca, from March 2017 to March 2022, taking into account the new classification criteria, the importance of an analysis biological was highlighted (diagnosis, monitoring and therapeutic choice).

KEYWORDS: Systemic lupus erythematosus, Immunology.

INTRODUCTION

Systemic Lupus Erythematosus (SLE) is a serious and currently incurable autoimmune disease. With an insidious onset and unpredictable course, SLE is characterized by a variety of clinical manifestations, and a broad autoantibody profile that makes it a great diagnostic challenge, especially at a very early stage of the disease. The diagnosis of SLE is clinical, supported by serological tests. In addition, no isolated clinical or biological parameter can confirm the diagnosis, hence the interest of the classification criteria.

MATERIAL AND METHODS

This retrospective study was conducted at the National Reference Laboratory (LNR) of the Cheikh Khalifa International University Hospital in Casablanca, from March 2017 to March 2022. A total of 5169 ANA requests were processed on patients from a variable age group, and treated with Immunofluorescence, ImmunoDots and Enzyme-Linked Immunoassay (ELISA).

New sets of criteria, in particular from the European League Against Rheumatism (EULAR) and the American College of Rheumatology (ACR) 2019 allow earlier and more accurate classification of SLE. The latter reinforce the role of immunological biomarkers and present the best combination of sensitivity (96.1%) and specificity (93.4%), but require that Anti-Nuclear Antibodies (ANA) be positive as an entry criterion. Thus, if the patient is positive for ANAs, further testing for antigen-specific ANAs, such as dsDNA, Sjögren's syndrome A antigen (SSA), antigen Sjögren's syndrome B (SSB), Sm and ribonuclear protein (RNP). However, for diagnosis, some patients may be ANA-negative with low complement levels and/or positive antiphospholipid antibodies could be used as an alternative entry criterion in the classification algorithm.[1]

RESULTS

During the study period, 5169 requests for ANA were processed with a clear female predominance during the period of genital activity with 72% of cases, and a sex ratio M/F of 0.4. (FIGURE 1).

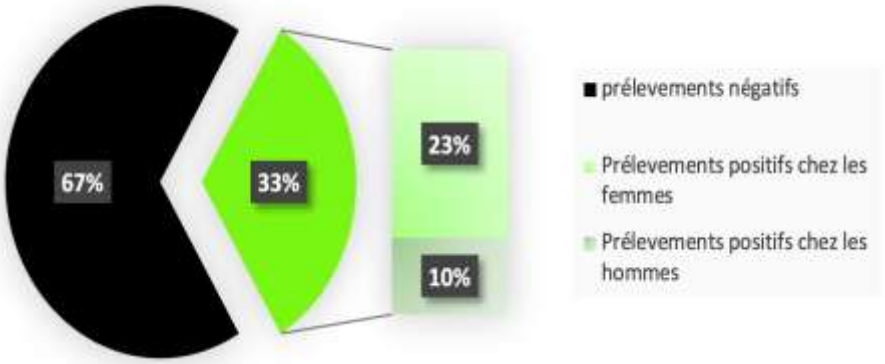

Figure 1: Epidemiology of ANA.

Depending on the IFI technique used, we observed different aspects of fluorescence, namely an aspect: speckled, homogeneous, nucleolar, centromeric, cytoplasmic and/or mixed. The speckled aspect is the most found with a rate of 53%, followed by the cytoplasmic and nucleolar aspect with a rate of 11% each, while the homogeneous aspect was only found in 7% of cases. (Figure 2).

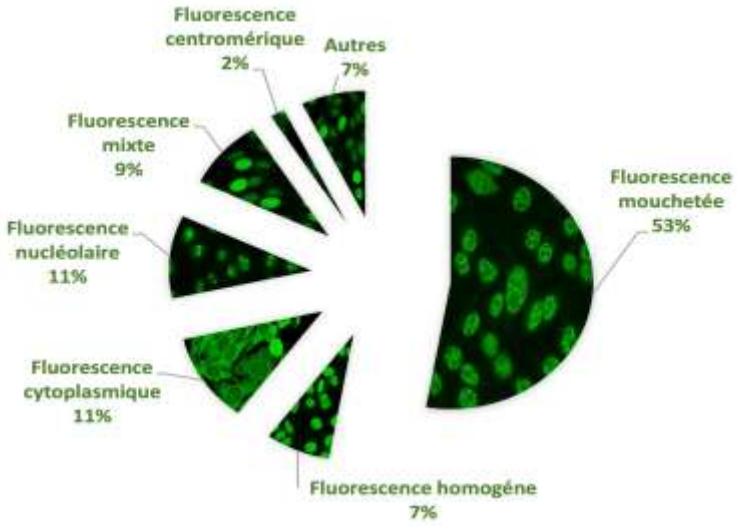

Figure 2: The different aspects of fluorescence.

Of the 898 Speckled aspects revealed by IFI, 362 were completed by an assay for anti-ECT antibodies by immuno-DOT (Figure 3).

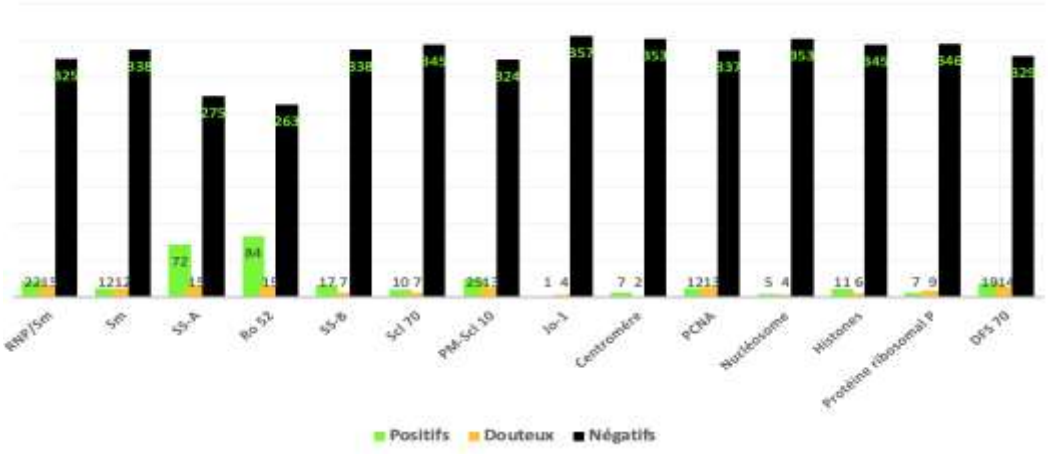

Figure 3: Anti-ECT Antibody Results in Speckled Fluorescence.

Of the 125 homogeneous aspects revealed by IFI, 33 were completed by an assay of anti-ECT antibodies by immuno-DOT. (Figure 4).

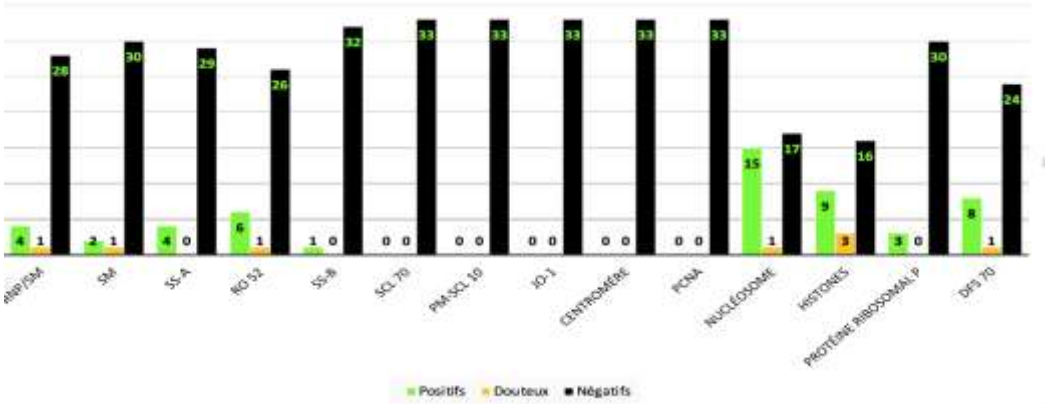

Figure 4: Results of anti-ECT antibodies in Homogeneous Fluorescence.

While out of the 125 homogeneous aspects revealed by IFI, 88 were completed by an anti-DNA antibody assay by ELISA, of which 47% were positive. (Figure 5).

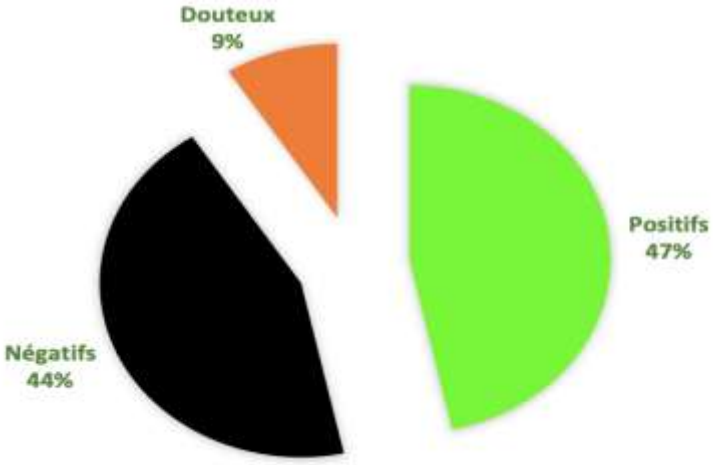

Figure 5: Results of anti-DNA antibodies in homogeneous fluorescence.

DISCUSSION

SLE is an autoimmune disease characterized by the production of a large panel of autoantibodies. Numerous publications have established a clinico-immunological correlation of patients with SLE, the results of which corroborate those found in our cohort. Indeed, the female predominance found in our study has been reported by several authors suggesting the influence of certain hormones, namely estrogens. Although ANA is not unique to SLE, it is highly characteristic of SLE and can be used as a biomarker for screening, classification, diagnosis, prognosis, and staging.[2] ANA tests have high sensitivity, ranging from 90-95% in SLE patients, but relatively low specificity as they may be present in 5-20% of healthy controls, especially in the elderly.[3]

In general, the IFI is considered a very sensitive method, but not very specific, whereas the ELISA, which makes it possible to detect antibodies specifically directed against well-characterized nucleoproteins, is more specific but less sensitive. Due to its high sensitivity, IFI is used as a screening test; in the event of positivity, autoantibodies more specifically associated with certain autoimmune pathologies are then sought using ELISA. Regarding fluorescence aspects, the Homogeneous aspect typically associated with SLE was only found in 7% of cases while the most frequently found was speckled.[4]

Thus, the role of the immunology laboratory is crucial in SLE and allows not only to confirm or exclude the diagnosis, but also to monitor disease activity and identify subgroups of patients at a certain stage. early, so that it can be treated effectively with the ultimate goal of improving disease control.

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