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Retrospective Analysis of the Prevalence of Autoimmune Diseases at the University Hospital of Libreville, Gabon

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Abstract

Introduction: Autoimmune diseases remain very poorly studied in Africa. We undertook a retrospective study in the internal medicine department of the Libreville University Hospital Center. **Methods:** The study consisted of the analysis of clinical and biological data of patients who presented to this department from 2020 to 2023. Patients with autoimmune diseases were selected based on clinical criteria defined by the EULAR/ACR and biological tests such as erythrocyte sedimentation rate (ESR), CRP, transaminases, protein electrophoresis, albumin, creatinine, and measurements of the quantity of different autoantibodies (anti-native DNA, antinuclear antibodies, anti-U1RNP antibodies, anti-SSA/RO, anti-SSB/LA, anti-MPO antibodies, anti-Pr3 antibodies, antiphospholipid antibodies, anti-NMO/anti-ECT antibodies, anti-CCP antibodies). **Results:** Of the 3,120 patients seen in the department between 2020 and 2023, 4.10% had autoimmune diseases. The study shows that 103 (3.5%) of these patients were diagnosed with lupus, with a majority of women (77%) and a small proportion of men (17%). The average age of the patients was 35.6 years ± 14.4 years. The patients' clinical profile shows a predominance of neurological, renal, cutaneous/mucosal, hematological, muscular, and articular symptoms, while biologically, an elevation of antinuclear antibodies is observed. **Conclusion:** This study confirms the existence of autoimmune diseases in Gabon, with lupus being the most prevalent.

Keywords

Autoimmune Diseases, Lupus, Antinuclear Antibodies, Gabon

1. Introduction

Autoimmune diseases (AIDs) result from a dysregulation of the immune system's ability to recognize self and non-self, leading to an inappropriate immune response to self-constituents or a dysregulation of the immune system that becomes excessively sensitive to exogenous factors such as smoking or medications, leading to allergic or autoimmune reactions. These are chronic inflammatory diseases generally of multifactorial causes [1]. Depending on the physiological involvement, two categories of autoimmune diseases are distinguished: so-called "organ-specific" or punctual autoimmune diseases, which are defined by the involvement of a single organ [1], and so-called "non-organ-specific" autoimmune diseases, also called systemic autoimmune diseases, which are defined by the involvement of different organs [1].

Today, it is estimated that 5 to 10% of the world's population is affected by an autoimmune disease, a large majority (80%) of which occur in women [2]. They affect approximately 5 million people in France and constitute the third group of diseases in terms of morbidity and mortality in industrialized countries, after cancers and cardiovascular diseases [2].

In Africa, patients with autoimmune diseases often experience a diagnostic delay, sometimes lasting up to seven years, before receiving a clear diagnosis that determines their condition [3]. Furthermore, diagnosis relies primarily on a complete blood count (CBC), including the erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), creatinine, transaminases, and essentially clinical criteria defined by the American College of Rheumatology (ACR). This is done in relation to observable symptoms. Antibody testing is generally performed in Europe at the patient's expense [3]. The same phenomenon is observed in Gabon, as demonstrated in the study preceding ours, which aimed to determine the prevalence of rheumatological and mixed connective tissue diseases and their clinical characteristics in a hospitalized population [3]. This study also shows elevated levels of anti-U1RNP antibodies (anti-U1 Ribonucleoprotein antibodies) in 100% of cases and, in 6 cases (87.7%), an antinuclear antibody level exceeding 1280 IU [3]. However, none of the articles specify whether antibody testing was performed locally or in Europe. The limitations of the available technical facilities are evident in this regard.

In support of these assertions, Data on the prevalence of lupus in sub-Saharan African countries, in particular, are still very limited due to the scarcity of studies. Systemic lupus erythematosus (SLE) may be more prevalent among most ethnic groups in the low- and middle-income countries (LMICs), yet these countries are under-represented in epidemiological data on SLE [4]. According to a study of six autoimmune and systemic diseases (ASD) in adult patients at the Niannankoro Fomba Regional Hospital in Ségou between 2019 and 2023, IBD remains a rare and little-known condition in sub-Saharan Africa, due to the use of traditional healers and misdiagnosis [5]. Furthermore, thirteen studies were included in a recent review and selected following a rigorous screening process; the aim of this

review was to identify the structural disparities that influence access to care, to systematically identify the barriers to the diagnosis of lupus in sub-Saharan Africa, and to synthesize the available data on clinical outcomes. This review suggests that lupus has been regarded as rare in sub-Saharan Africa for decades, largely due to a lack of recognition, disparate data systems, and conflicting public health priorities [6].

In Gabon, several retrospective studies have been carried out on different autoimmune diseases, but discontinuously and over several years. The diseases studied have insufficient documentation, which is based mainly on the study of clinical characteristics, but no molecular, immunological, or genetic bases have been established. However, a retrospective study tracing cases from 1999 to 2020 [7] shows a seasonal variation in the clinical expression of autoimmune diseases. This suggests the influence of environmental factors on the clinical expression of autoimmune diseases. Furthermore, it has been shown that the association of certain autoimmune diseases, such as mixed connective tissue disorders (Sharp syndrome), and hypertension can lead to the patient's death [8]. This syndrome is characterized by an isolated elevation of anti-U1RNP, which can reach up to 17 times the normal level. We only have a few aspects noted during diagnosis, such as the presence of anti-U1RNP antibodies [3]. Consequently, the distribution of autoimmune diseases is not very well understood. Furthermore, it has also been observed that anti-dsDNA (anti-double-strand DNA) and anti-Sm (anti-Smith) antibodies are elevated in Black African subjects, which would explain the severity of SLE (systemic lupus erythematosus) and its early onset in Black women. This specific presentation in Black individuals calls for the development of diagnostic methods specific to Black people, which is not yet the case. It appears that the clinical presentation is more severe and different in men, according to a study on male systemic lupus erythematosus [9]. It has been suggested that the occurrence of SLE is linked to the HLA (Human Histocompatibility Antigen) system, as determined in a study of specific combinations of class II haplotypes HLA-DR2 and DR3 [10]. This observation stems from different combinations of class II risk haplotypes in a large multicenter collection of 780 families with SLE, in which DR2 haplotypes were associated with antibodies directed against the nuclear antigen Sm, and DR3 genotypes were associated with anti-Ro and anti-La autoantibodies. Both SLE cases and unaffected family members, heterozygous DR2/DR3, had a particularly high risk of developing anti-Ro antibodies (anti-ribonucleoprotein antibodies) and were enriched for La (La protein) and Sm (protein D). The HLA class II haplotypes DR2 and DR3 would therefore be key determinants of autoantibody production and susceptibility to disease in SLE. In the absence or insufficiency of biological data in our study, it is difficult to support this assertion. Furthermore, the clinical expression of lupus in Black individuals could be much more severe, being associated with HLA II polymorphism; however, no studies in this regard have been conducted in Gabon. The present study, which aims to determine the prevalence of autoimmune diseases in the busiest hospital setting in

Gabon, should serve as a basis for analyses intended to determine the molecular, immunological, and genetic bases underlying autoimmune diseases in the Black population of Gabon.

2. Materials and Methods

2.1. Study Site

This is a retrospective study conducted from April 2024 to August 2025 in the Department of Internal Medicine at the CHUL (University Hospital Center of Libreville) in Gabon. The study focused on patients diagnosed with autoimmune diseases between 2020 and 2023 who underwent the standard examinations required for this purpose; their data were collected and analyzed.

2.2. Clinical Method

Standard examinations included the EULAR/ACR (European League against Rheumatism/American College of Rheumatology) [8]. Classification was based on the ACR/EULAR, as mentioned below:

Mandatory Entry Criterion

- **ANA Test:** Titer of ≥1:80 on HEp-2 cells (or an equivalent positive test) on at least one occasion.

Note: *If this is negative*, *the patient is not classified as having SLE*.

Clinical Domains (Up to 1 Criterion per Domain is Counted; the Highest Weighted Feature)

- **Constitutional:** Unexplained fever (2 points).
- **Hematologic:** Leukopenia or lymphopenia (3 points), thrombocytopenia (4 points), autoimmune hemolysis (4 points).
- **Neuropsychiatric:** Delirium (2 points), psychosis (3 points), seizures (5 points).
- **Mucocutaneous:** Non-scarring alopecia or oral ulcers (2 points); subacute/discoid lupus (4 points); acute cutaneous/malar rash (6 points).
- **Serosal:** Pleural or pericardial effusion (5 points); acute pericarditis (6 points).
- **Musculoskeletal:** Joint involvement (synovitis in ≥2 joints or tenderness/swelling with morning stiffness) (6 points).
- **Renal:** Proteinuria > 0.5 g/24h (4 points); class II or V lupus nephritis (8 points); class III or IV lupus nephritis (10 points).

Immunological Domains

- **Antiphospholipid Antibodies:** Anticardiolipin, anti-β2-glycoprotein I, or lupus anticoagulant (2 points).
- **Complement Proteins:** Low C3 or C4 (3 points); low both C3 and C4 (4 points).
- **SLE-Specific Antibodies:** Anti-dsDNA antibody or anti-Smith (anti-Sm) antibody (6 points).

Rules for Scoring

- **Threshold:** A total score of ≥ 10 points is required, provided that at least 1 clinical criterion is met.

- **Attribution Rule:** A criterion is not counted if there is a more likely alternative diagnosis or explanation for it.

Timing: Criteria do not need to occur at the same time and only need to be noted on at least one occasion.

2.3. Biological Analyses

- **Biochemical Analyses**

The complete blood count, as well as standard biochemistry tests, was carried out according to their reference values, we have CRP (C-reactive protein, normal value 5 mg/L), creatinine (normal value [between 50 mmol/L to 120 mmol/L]), albumin (normal value > 30 mg/L), AST level (normal value < 40 IU) and ALT level (normal < 37 IU) as well as the sedimentation rate (whose normal value depends on age, at the first hour: before 50 years ESR < 15 for men and 20 for women; over 50 years ESR < 20 for men and 30 for women). Serum protein electrophoresis, which included gammaglobulins (normal value [between 8 - 16 g/L]), albumin (between 36 - 50 g/L), total protein (normal value [between 65 - 85 g/L]), and finally, the Coombs test (absence of agglutination, which means negative, presence of agglutination, which means positive).

- **Immunological Analyses**

For some patients, we were able to obtain the results of antibody tests via indirect immunofluorescence on Hep-2 cells (IFA) and enzyme-linked immunosorbent assays (ELISA), which are very often observed in autoimmune diseases. These were analyzed according to their reference titer values: antinuclear antibodies (normal value < 1/80), anti-native DNA antibodies (normal value < 1/10), anti-SSA antibodies (anti-Sjögren syndrome A antibodies) (normal value < 7 U/ml), and anti-SSB antibodies (anti-SSB phosphoprotein) (Normal value < 7 U/ml), U1RNP autoantibodies (anti-U1-ribonucleoprotein antibodies) (normal value < 5 U/ml), as well as anti-neutrophil cytoplasmic antibodies (ANCA), anti-MPO (anti-myeloperoxidase antibodies) (normal value < 20 U/ml) and anti-Pr 3 (anti-proteinase 3 antibodies) (normal value < 2 IU/ml).

2.4. Ethical Consideration

This study falls under the Gabonese law for the protection of private or individual personal data (law n˚ 025/2023). To obey the ethical process, the physical file of each individual was used to extract data, without taking individual names, which keeps the anonymous character of the data. The physical file was returned immediately after the extraction of the information, other than the name of the individual, which can allow identification of that person.

2.5. Statistical Analysis

The data were entered into Excel 2024 and analyzed using Jamovi 2.3.21 software (The Jamovi Project, 2025, https://www.jamovi.org). Since the study was descriptive, descriptive statistical tests, frequency tests, and chi-square tests were per-

formed on normally distributed data, and Welch and Mann-Whitney tests were performed on data that did not exhibit homogeneity of variances and had different sizes. Correlation tests were also performed; p-values for each result less than 0.05 were considered significant.

3. Results

3.1. Characteristics of the Study Population

The study covered the period from 2020 to 2023. A total of 3,120 patients attending (outpatient appointments/admissions) this department were selected for this study; 77% were women and 22% were men, with a sex ratio of 29. The patients' ages ranged from 8 to 77 years, with a mean age of 35.6 years ± 14.4 years. Weight data were available for 58 patients, ranging from 38 to 90 kg, with a mean of 59.1 kg ± 11.2 kg (Table 1). Height was available for 25 patients, ranging from 1.51 m to 1.85 m, with an average of 1.66 m ± 0.1 m, and the average body mass index (BMI) was 21.4 kg/m^2 ± 5.5 kg/m^2, with 25% of patients having less than 19.6 kg/m^2 and 75% of patients having more than 25.5 kg/m^2 (Table 1).

Table 1. Socio-demographic characteristics of patients with autoimmune diseases at the University Hospital Center of Libreville.

	Age (Years)	Weight (Kg)	Size (m)	BMI
Data Present (Number)	128	58	25	14
Average	35.6 ± 14.4	59.1 ± 11.2	1.66 ± 0.1	21.4 ± 5.5
Data Missing (Number)	0	70	103	114
Total	**128 (F/M)**	**128**	**128**	**128**

Note: BMI: Body Mass Index.

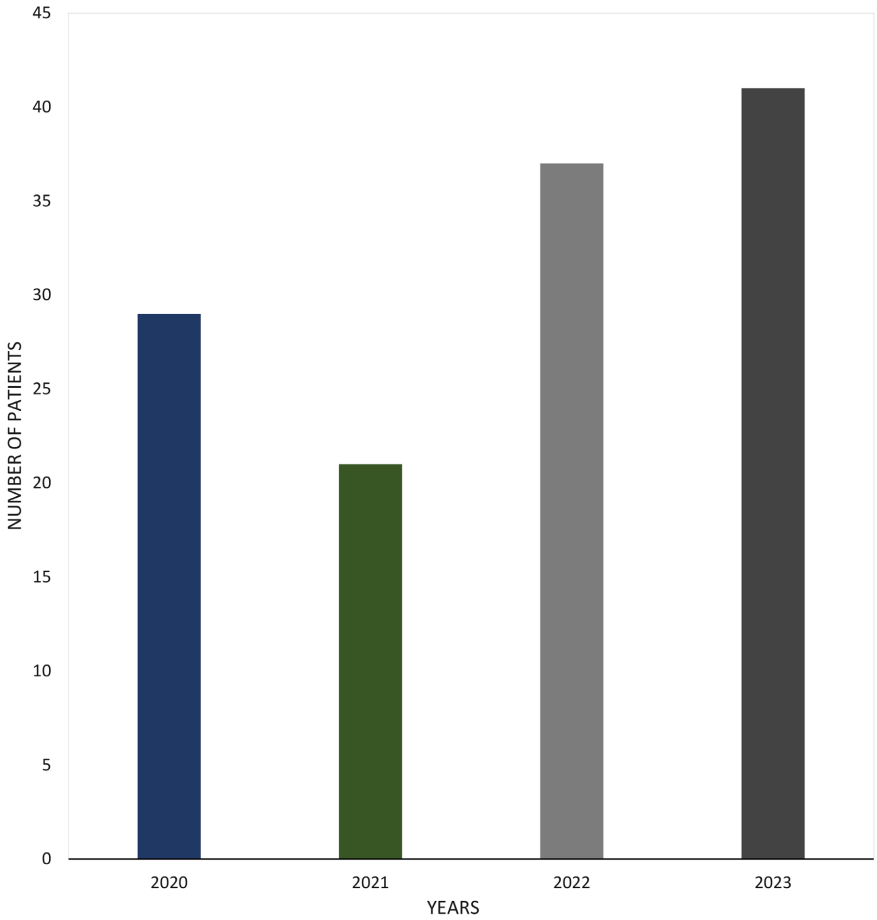
3.2. Clinical and Biological Results

Analysis of all patients shows that from 2020 to 2023, 3,120 patients were examined, and 128 of them had autoimmune diseases. We observed that the distribution of patients with autoimmune diseases was 4.9% in 2020, 2.5% in 2021, 4.4% in 2022, and 4.7% in 2023 (Figure 1). During this period (2020-2023), according to the EULAR/ACR criteria, we identified a total of 90 women and 18 men with lupus, representing 108 (84%) patients with an incidence of 3.5%, this includes cutaneous lupus, discoid lupus, and systemic lupus erythematosus.

With a total of 103 patients, a hospital-based incidence of 3.3%, systemic lupus erythematosus is the most frequently identified lupus among patients with autoimmune diseases. We found an association between systemic lupus erythematosus and other autoimmune diseases belonging to the connective tissue group, such as rheumatoid arthritis, scleroderma, Behçet's disease, and autoimmune hemolytic anemia in 10 patients, while 8 patients had lupus associated with bacterial, viral, and parasitic diseases such as HIV (Human Immunodeficiency Virus), tubercu-

losis, toxoplasmosis, and hepatitis B.

Our study identified 14 different autoimmune diseases, with the most prevalent in both females and males. We observed that patients with lupus, particularly systemic lupus erythematosus, were the most numerous, followed by autoimmune hemolytic anemia, vasculitis, and discoid and cutaneous lupus (Table 2). The clinical characteristics of the autoimmune diseases in our patients are presented (Table 3). Based on 9 EULAR/ACR criteria, we have diverse clinical expressions, 6 of the most frequent of which are represented (Table 3).



Note: The number of patients with autoimmune diseases per year was plotted as one histogram.

Figure 1. Distribution of patients by year.

Table 2. Representation of autoimmune diseases and affected patients according to sex.

	SEX		
MAI	**F**	**H**	**Total**
AUTOIMMUNE HEMOLYTIC ANEMIA	1	4	5
SLE*	**86**	**17**	**103**
LUPUS CUTANEOUS	2	0	2
LUPUS DISCOIDES	2	1	3

Continued

MICROSCOPIC POLYANGEITE	1	1	2
VASCULARITY	6	2	8
OTHER CONNECTIVE TISSUE DISEASES	1	4	5
Total number of patients with MAI	99	29	128

Note: *SLE (Systemic Lupus Erythematosus) is the most prevalent disease.

Table 3. Most frequent clinical characteristics of patients with autoimmune diseases at the University Hospital Center of Libreville.

Affected	Patients Tested	Number of Patients with This Sign	Positive (Total)	Data Missing
NEUROLOGICAL	**13**			
Headache		2	13	115
Depression		1		
Meningitis		1		
Asthenia		9		
RENAL	**13**			
HTA		9	13	115
Nephritis		4		
SKIN/MUCOSA	**33**			
Alopecia		**4**		
Decreased visual		**1**		
acuity		**8**	**33**	**95**
Epistaxis		**3**		
Lesion		**2**		
Discoid lupus		**8**		
Edema		**2**		
Photosensitivity		**3**		
Ulceration		**2**		
Xerostomia				
HAEMATOLOGICAL	**18**			
Chronic anemia		9		
Hemolytic anemia		3	**18**	**110**
Bicytopenia		2		
Neutropenia		1		
Pancytopenia		3		
MUSCULAR	**14**			
Body aches		1		
Muscle pain		4		

Continued

Lower back pain		1	14	114
Myalgia		5		
Myositis		1		
Rheumatoid Arthritis		1		
Tendinitis				
ARTICULAR	**20**		**20**	**108**
Polyarthralgia	17	**17**		
Osteoarthritis	3	**3**		

Furthermore, we observed a high number of cases in 2020, followed by a decline in 2021, with a resumption of the increase in cases in 2022 and 2023 (Figure 1).

From a biochemical standpoint, the average levels of Gamma globulins (Mean = 34.5, $p = 0.003$) and C-reactive proteins (Mean = 21.7, $p = 0.013$) are significantly higher than their reference values. Of the 16 patients, they had elevated C-reactive protein (out of 32 patients examined). The albumin level is significantly lower than its reference value (Mean = 34.5, $p < 0.001$). In contrast, the means of proteinuria, sedimentation rate, aspartate aminotransferase (AST), and alanine aminotransferase (ALT) are not significantly different from their reference values. In comparison, 5 patients had elevated creatinine, including 2 cases with aggravated renal failure and 2 with nephropathy consistent with lupus-related complications (Table 4).

On the other hand, antinuclear antibodies were the most frequent, affecting 53 patients. Simultaneous antinuclear antibodies and anti-native DNA antibodies were elevated in 19 patients, while antiphospholipid antibodies were elevated in 2 patients (Table 4). The mean levels of antinuclear antibodies (Mean = 571, $p < 0.001$), anti-native DNA antibodies (Mean = 54.7, $p = 0.020$), and anti-U1RNP antibodies (Mean = 104, $p = 0.007$) are significantly higher than their reference values while the averages of anti- antibodiesPr3 (anti-proteinase 3 antibody), anti phospholipid, anti MPO, anti SSB/LA (anti-phosphoprotein SSB/La protein) and anti-SSA/RO (Anti-Sjögren syndrome A antibodies/Ro protein) are not significantly different from their reference values.

Depending on sex, the average level of antinuclear antibodies in women is significantly higher than the average level of antinuclear antibodies in men (618 vs. 263, $p < 0.001$); while there is no significant difference in mean values between men and women for all other parameters, both immunological and biochemical, there are no significant correlations between age and any biological parameters. However, we observe positive correlations between certain biological parameters, such as antinuclear antibodies and anti-native DNA antibodies ($R = 0.449$, $p = 0.011$), anti-SSA/RO antibodies and anti-U1RNP antibodies ($R = 0.991$, $p = 0.009$), ANCA anti-MPO antibodies and ANCA anti-Pr3 antibodies ($R = 0.995$, $p < 0.001$), alanine aminotransferase and aspartate aminotransferase ($R = 0.861$, $p < 0.001$), C-reactive protein and aspartate aminotransferase ($R = 0.659$, $p = 0.027$),

C-reactive protein and creatinine (R = 0.824, p = 0.003), and finally C-reactive protein and the gamma reference which represents hypergammaglobulinemia (R = 0.979, p < 0.001).

In general, all analyses reveal a high level of missing data, ranging from 69 to 124 missing data points among the 128 persons potentially with SLE. This has been shown either on the clinical side or the biological analysis (Table 3 and Table 4).

Table 4. Immunological and biological characteristics of patients with autoimmune diseases at the University Hospital Center of Libreville.

Test	Patients Tested	Negative	Positive	Data Missing
ELISA	**11**	**0**	**11**	**117**
ANTI-CCP			1	
ANTI SSA/RO			1	
ANTI SSB/LA			**9**	
INDIRECT	**60**	**4**	**56**	
IMMUNOFLUORESCENCE (IFI)				
ANTI-NATIVE DNA		2	**21**	
ANTI-U1RNP		1	2	**69**
ANTINUCLEAR ANTIBODIES		1	**31**	
ANCA		0	1	
AC ANTI-NMO/ANTI-ECT		0	1	
ANTIPHOSPHOLIPID	**5**	**4**	**1**	**124**
COOMBS TEST	**7**	**2**	**5**	**122**
ANTI-IgG				
ELECTROPHORESIS	**14**		**14**	
SERUM PROTEIN				
MONOCLONAL GAMMOPATHY		**0**	1	**115**
HYPERGAMMAGLOBULINEMIA			**13**	
BIOCHEMISTRY	**43**		**21**	
AST/ALT > 35 IU/L			**10**	
CREATININE > 120 mg/L		**22^{++}**	7	**85**
ALBUMINE < 30 mg/L			4	
C-REACTIVE PROTEIN	**32**	**16^{++}**	**16**	**96**
SEDIMENTATION RATE°	**11**	**6^{++}**	**5**	**117**
PROTEINURIA	**14**	**4^{++}**	**10**	**114**

Note: X^{++} = normal value.

All patients were treated with Cortancyl or Plaquenil, and the four patients with

renal function abnormalities had additional corticosteroids or dialysis.

4. Discussion

We conducted a retrospective cross-sectional analysis of patients followed in the Internal Medicine Department of the Libreville University Hospital Center. This study provides an overview of the current diagnosis of autoimmune diseases in Gabon. It contributes to the definition of the clinical and biological profiles of patients with autoimmune diseases in this country. 69 to 124 data points were missing. This could have severely undermined the reliability of diagnoses based on the EULAR criteria. However, this picture reflects the dispersion of data acquisition within the 128 lupus positif individuals. For example, among the 69 patients with missing immunofluorescence (IFI) data, all had clinical signs that met the EULAR/ACR criteria. Similarly, the 124 with missing data on antiphospholipid antibodies (**Table 4**) had other autoantibodies and clinical signs that matched the EULAR/ACR criteria. It appears that lupus has the highest incidence among autoimmune diseases during the period studied (2020 to 2023).

This assertion is essentially based on clinical criteria, as defined by EULAR/ACR. This results in an incidence of 3.3% of SLE, similar to that of other studies conducted, such as the study in Nigeria [11] which consisted of studying the clinical, biological and serological manifestations of Nigerians with SLE over a six-year period and made it possible to determine the prevalence of SLE at 5.28% for 1250 rheumatological consultations, However, this differs from the profile observed in Chad [12], which consisted of describing the epidemiological, clinical, and therapeutic profile of systemic lupus erythematosus (SLE) at the University Hospital of N'Djamena in order to define the specific characteristics of systemic lupus erythematosus over two years. During this period, 1,094 patients were admitted for internal medicine consultations, among whom 14 cases of lupus were diagnosed, representing a prevalence of 1.27%. Data on the prevalence of lupus in sub-Saharan African countries, in particular, are still very limited due to the scarcity of studies. Systemic lupus erythematosus (SLE) may be more prevalent across most ethnic groups in low- and middle-income countries (LMICs); however, these countries remain underrepresented in epidemiological data on SLE [13]-[33].

There is a lack of biological investigation to confirm or refute the general clinical findings at CHUL. This is why sometimes only one patient has undergone complete biological testing, including the various antibodies directed against the self. Despite this deficiency, it is noted that lupus is the most prevalent autoimmune disease, a finding confirmed by other studies conducted in Gabon. Indeed, in a Gabonese study whose aim was to determine the prevalence of mixed connective tissue disease (MCT) among connective tissue diseases and all rheumatological pathologies in a hospitalized population, and then to describe the clinical characteristics of the disease between January 2010 and December 2015 for 6,050 patients examined, systemic lupus erythematosus was the most frequent autoimmune disease. This study also shows that Women were the most affected, which

is consistent with the general trend reported in this literature, such as demonstrated by a study in Nigeria whose objective was to study the socio-cultural characteristics. The study aimed to analyze the demographic data of patients consulting at the clinic and to study the clinical and serological profile of systemic lupus erythematosus (SLE) in a predominantly Yoruba population over a 7-year period. It is generally accepted that in women, a hormonal change is the cause of this condition. Indeed, estrogen is identified as responsible for this situation in the study on the relationship between systemic lupus erythematosus (SLE) and sex hormones, contraception, and pregnancy [13].

Autoimmune diseases, including lupus, affect adults of both sexes, with a very strong predominance of women. The mean age of 35.6 years ± 14.4 years is substantially similar to data from a Nigerian study [14] (39.5 years ± 15 years); furthermore, female predominance has also been observed in other findings from African studies and the European literature [10]-[16].

This study observed a high number of autoimmune diseases in 2020, followed by a decrease in 2021, and then a gradual increase between 2022 and 2023. Several hypotheses can be considered. The COVID-19 pandemic seems plausible. Indeed, fragments of RNA molecules mimicking epitopes that could interact with the human immune system, or even the COVID-19 vaccine, could trigger autoimmune diseases [15] [32]. On the other hand, the release of autoantigens during tissue damage caused by SARCOV-2 could activate the host's immune system, triggering the disease [16]. Furthermore, in some patients, the immune response becomes uncontrollable. Indeed, a study shows that many human tissue antigens have shown a strong response with antibodies directed against many Coronavirus proteins. Indeed, proteins of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2 proteins), such as the S and N proteins of SARS-CoV-2 and autoimmune target proteins, can lead to the occurrence of autoimmune disease. These Antibodies against SARS-CoV-2 remain for a very long time after infection and even after recovery. This may possibly explain the progression of autoimmune diseases between 2022 and 2023 [15].

The lack of biological data is significant; the number of patients who have undergone a complete biological workup is very low, making the precise determination of the autoimmune disease subtype difficult, which has consequences for treatment, patient management, and therefore contributes to diagnostic delays. A widespread observation in sub-Saharan Africa, as noted in other studies, notably that of Tchad [12], where the diagnostic delay is between 22 and 32 months, or in Cameroon [17], in which the average diagnostic delay is 6.5 years.

Thirteen studies were included in a review and selected following a rigorous screening process; the aim of this review was to identify the structural disparities that influence access to care, to systematically identify the barriers to the diagnosis of lupus in sub-Saharan Africa, and to synthesize the available data on clinical outcomes. This review suggests that lupus has been regarded as rare in sub-Saharan Africa for decades; however, this view is challenged by recent literature,

which suggests that lupus in sub-Saharan Africa has historically been underdiagnosed rather than rare, largely due to a lack of recognition, disparate data systems, and conflicting public health priorities [18].

This study highlights that SLE in Sub-Saharan Africa is underreported, despite its intense clinical manifestation and outcomes. Recurrent diagnostic delay due to limitations of structural health systems and socio-cultural barriers is the main driver of this paradox, rather than the actual rarity of epidemiology [18]-[34].

The clinical manifestations in our series also follow the trend reported in other series, namely the predominance of joint and mucocutaneous involvement. Renal involvement appears to be frequent among Black patients and is associated with a poorer prognosis [17]-[23]. It was highlighted in our study by the number of patients with elevated albumin (n = 17/20) and creatinine (n = 5/17) levels, but much less pronounced than in the Tunisian series [18]. However, renal biopsy was not performed in all our patients, so the data are probably underestimated. In the same vein of biological monitoring of patients, we note a slight increase in CRP levels in systemic lupus erythematosus (SLE) was observed, as described in the study [24], which examined the association of C-reactive protein isoforms [25] with SLE phenotypes and disease activity in 160 patients. This study noted that CRP levels remain low or slightly elevated in SLE. However, CRP only reflects the inflammatory aspect, just as AST/ALT do clinically. The Coombs test, used to detect the presence of antibodies against red blood cells, was used seven times in our study and was positive in five cases, indicating a high risk of hemolytic anemia in these patients. Our analysis revealed that only 53 of the 128 diagnosed patients were tested for antinuclear antibodies (ANA), of whom 44 had high levels of ANA (83%), similar to the study [26] in Tunisia, where ANA was detected using indirect immunofluorescence, with 97.6% of patients finding positive results. The predominance of antinuclear antibodies and anti-native DNA antibodies is consistent with the results of a study in Côte d'Ivoire [23], although it differs from the results of other series in sub-Saharan Africa [25]-[33]. Indeed, a study [28] that characterized ANA reactivity profiles and related them to the clinical presentation of SLE in Black African patients demonstrated that, despite an elevation of antinuclear antibodies, other more specific antinuclear antibodies, proliferative cell nuclear antigens (PCNA), were also present in 54% of cases and therefore should also be included in the diagnosis of SLE. On the other hand, a study that consisted of evaluating a diagnostic approach of anti-dsDNA antibodies in combination with Antinuclear antibody (ANA) screening in 113 patients, including 53 with SLE, demonstrates that anti-double-stranded deoxyribonucleic acid (dsDNA) antibodies are highly specific markers of SLE, with 77.3% of patients testing positive [29]. Furthermore, the analysis of current results seems to support the previously proposed hypothesis of a specific profile in Gabonese patients; this profile would be characterized by a significant increase in CRP in the absence of any infectious context, a high erythrocyte sedimentation rate (ESR), and antinuclear antibodies with a predominance of anti-DNA antibodies [30]-[34]. Hence, there is a need to

precisely define the factors involved in this particular profile of the Black African population in general, and of the Gabonese population in particular.

This study demonstrates that autoimmune diseases are present in Gabon, dominated by systemic lupus erythematosus, discoid lupus, and mixed connective tissue diseases. However, the prohibitive costs of care for diagnosis and treatment, along with popular beliefs that identify these diseases as witchcraft, hinder accurate and early intervention. The evident lack of analytical structures prevents us from determining the origin of the polymorphism in the clinical expression of SLE in Black women. Consequently, neither the genetic nor the immunological basis is known. This study highlights the predominance of lupus in Gabon. However, the management of autoimmune diseases in Gabon, as elsewhere in Africa, faces numerous problems related to, among other things, a lack of awareness, underestimation, misdiagnosis, or late diagnosis [25]-[32], high diagnostic costs, and sometimes spiritual considerations, as mentioned in a study in Nigeria [14] According to a study of six autoimmune and systemic diseases (ASD) in adult patients at the Niannankoro Fomba Regional Hospital in Ségou between 2019 and 2023, IBD remains a rare and little-known condition in sub-Saharan Africa, due to the use of traditional healers and misdiagnosis [15].

This study shows many limitations. Firstly, this is a single-hospital-based study, which cannot be used as a population-level prevalence estimate; there are also limitations in either clinical or biological diagnostics, and 69 to 124 data points are missing for patients. This limitation is clearly seen with incomplete antibody testing and non-systematic renal biopsy.

Therefore, there is a need to initiate studies on the prevalence of autoimmune diseases and to identify the specific characteristics of lupus in Black individuals. This is necessary for appropriate treatment. Furthermore, research should be conducted to localize and standardize antibody testing protocols, following multicenter studies throughout Gabon.

Author Contributions

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5) Formal analysis: Josaphat Ibaba.

6) Investigation: Jeanis Paule Avomo Akue.

7) Resources: Josaphat Ibaba.

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11) Visualization: Josaphat Ibaba.

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All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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