Scientific Research Publishing

Open Journal of Internal Medicine, 2023, 13, 76-84
https://www.scirp.org/journal/ojim
ISSN Online: 2162-5980
ISSN Print: 2162-5972

Panorama, Reasons for Seeking Care and Evolution of Systemic Autoimmune Diseases in Benin Hospitals in 2021

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How to cite this paper: Anthelme, A.K., Armand, W.F., Flora, D.M., Ange, F., Mickael, A., Eugénie, D. and Angèle, A.K. (2023) Panorama, Reasons for Seeking Care and Evolution of Systemic Autoimmune Diseases in Benin Hospitals in 2021. *Open Journal of Internal Medicine*, **13**, 76-84.
https://doi.org/10.4236/ojim.2023.131008

Received: January 31, 2023
Accepted: March 24, 2023
Published: March 27, 2023

Abstract

Introduction: Systemic autoimmune diseases have been poorly studied in sub-Saharan Africa and their frequency is not well known. This study provided an overview of the main reasons for the use of care and their evolution in the main hospitals in Benin. **Methods:** This was a multi-centric descriptive cross-sectional study conducted in the internal medicine, rheumatology, dermatology and nephrology departments of nine (09) public and private hospital centers in Benin over a 57-month period, from January 1st, 2017 to September 30th, 2021. It involved patients followed for a systemic autoimmune disease. The data was collected with a digital survey sheet and then processed and analyzed with the R software (version 3.4). **Results:** Two hundred and three (203) patients were recorded, which represents a hospital frequency of 0.13%. The mean age was 44 years and the sex ratio (M/F) was 0.29. Connective tissue disease accounted for 95.07% of systemic autoimmune diseases which were dominated by rheumatoid arthritis (40.9%) and systemic lupus (37.4%). Ten cases of vasculitis have been reported and dominated by Behçet's disease (40%). The main reasons for seeking care were asthenia, weight loss and fever. Arthralgia and skin lesions are the main guiding signs. Six deaths (3.1%) were recorded among connective tissue disease and 1 death (10%) among vasculitis. **Conclusion:** In spite of being rare, systemic autoimmune diseases are a reality in Benin. A general population study would provide a better understanding of clinical characteristics and identify prognostic factors.

Keywords

Systemic Autoimmune Diseases, Connectivitis, Vasculitis, Benin

1. Introduction

Autoimmune diseases are rare conditions resulting from a dysfunction of the immune system [1]. There are two main groups: organ-specific autoimmune diseases and systemic autoimmune diseases. These diseases have a chronic course with periods of relapse and sometimes life-threatening complications. They can affect the quality of life and social relationships because of their functional and psychological impact.

Systemic autoimmune diseases include a group of heterogeneous pathologies that are clinically very polymorphic. Considered for a long time as non-existent in sub-Saharan Africa because they are under-diagnosed, they are increasingly reported due to the improvement of their knowledge by physicians and to a better availability of diagnostic resources [2] [3]. However, they remain little known by the general population.

Studies on systemic autoimmune diseases in sub-Saharan Africa are rare and limited to hospital series. However, these studies confirm an increasing prevalence. Indeed, if a hospital frequency of 0.2% had been found in Lomé (Togo) in 1999, higher frequencies of 0.8% and 1.8% were found respectively in Cotonou (Benin) in 2017 and in Abidjan (Ivory Coast) in 2018 [2] [4] [5]. In Benin, researches on systemic autoimmune diseases are very fragmentary and have mainly focused on systemic lupus erythematosus. More elaborate work is needed to better understand the specific features of these diseases in order to organize their management. Moreover, the lack of appropriate health policies for the management of these diseases would be responsible for a lack of consensus in the therapeutic attitudes of physicians. A study carried out in the internal medicine department of the National Teaching Hospital-Hubert Koutoukou Maga (CNHU-HKM) revealed the need for a multicentric study in order toidentify discrepancies and harmonize practices [2].

This study is an inventory of the management of systemic autoimmune diseases that will allow needs to be assessed in order to define national strategies for the management of these diseases that are not integrated into national health policies.

2. Study Framework and Methods

The study was carried out in nine (09) public and private hospitals in Benin; the list of these hospitals is shown in **Table 1**. The 9 sectioned hospitals were those with a specialized physician able to manage systemic autoimmune diseases during the study period and with a cohort of patients with systemic autoimmune diseases.

This was a descriptive cross-sectional study with, over the period from January 1st, 2017 to September 30th, 2021. All patients who were hospitalized or in consultation and who were diagnosed with systemic autoimmune disease were included on the basis of the criteria of the ACR and or EULAR adapted to each disease. All patients whose medical records were incomplete on diagnostic and

Table 1. Hospital center used as a study framework.

Districts	Hospital centers	Services
Atlantic-Littoral	National Teaching Hospital-Hubert Koutoukou Maga (CNHU-HKM)	Internal medicine
		Rheumatology
		Dermatology
		Nephrology
	Army Training Hospital of Cotonou (HIA Cotonou)	Internal medicine
	Atinkamey Polyclinic	Medicine
	Zonal Hospital of Menontin	Medicine
	Zonal Hospital of Abomey-Calavi	Medicine
	Zonal Hospital of Allada	Medicine
Oueme-Plateau	District Teaching Hospital of Oueme-Plateau	Medicine
Zou-Collines	District Hospital of Zou	Medicine
Borgou-Alibori	District Teaching Hospital of Borgou	Medicine

treatment items were excluded from the study.

The studied variables were sociodemographic variables (age, sex at birth, place of residence and profession), clinical data, paraclinical data and therapeutic data (treatment administered, evolution).

A standardized survey sheet was used to collect the data. These data were entered and analyzed using R software (version 3.4). Data from categorical variables were presented in terms of numbers and percentages, and for data from continuous variables, the mean, standard deviation and extrema were calculated.

3. Results

3.1. Epidemiological Data

3.1.1. Frequencies

A total of 203 patients with systemic autoimmune diseases were included out of a total of 148,361 patients admitted to the services concerned, representing a hospital frequency of 0.13%.

Connective tissue disease accounted for 95.07% with this order of frequency: rheumatoid arthritis, systemic erythematous Lupus, mixed connectivitis, systemic sclerodermy and Sjögren syndrome (Table 2). Systemics vasculitis (4.92%) were represented by Behçet's disease, hypocomplementemic urticarial vasculitis, undifferentiated vasculitis, giant cell arteritis and eosinophilic granulomatosis with polyangiitis (Table 2).

3.1.2. Age and Sex

For all systemic autoimmune diseases, the meanage was 44.17 ± 15.44 years with extremes of 6 and 85 years, and the sex ratio was 0.29. More particularly, the

Table 2. Distribution of systemic autoimmune diseases by frequency and mean age.

	Number (%)	Mean age (standard deviation)
Connective tissue disease	**193 (95.07%)**	**44.84 (15.18)**
Rheumatoid arthritis	83 (40.89%)	49.08 (15.22)
Systemic erythematous lupus	76 (37.44%)	39.61 (13.96)
Mixed/undifferentiated connectivitis	17 (8.37%)	40.34 (13.17)
Systemic sclerosis	16 (7.88%)	52.51 (14.11)
Sjögren's syndrome	1 (0.49%)	54
Vasculitis	**10 (4.92%)**	**31 (15.45)**
Behçet's disease	4 (1.97%)	25.13 (5.73)
Hypocomplementemic urticarial vasculitis	2 (0.98%)	28.61 (0.75)
Undifferentiated vasculitis	2 (0.98%)	31.08 (33.97)
giant cell arteritis	1 (0.49%)	58
Eosinophilic granulomatosis with polyangiitis	1 (0.49%)	34

mean age of connective tissue disease was 44.84 ± 15.18 years and that of vasculitis was 31 ± 15.45 years, and the sex ratios were 0.27 and 0.66 respectively. Table 2 indicates the various systemic autoimmune diseases listed, their frequencies and the average age at diagnosis.

3.1.3. Living and Caring Area

More than half of the patients lived and had been cared for in the structures of southern Benin, particularly in the Atlantic and Littoral districts, as shown in Table 3. In addition, they were mainly seen in internal medicine services (Table 4).

3.2. Clinical Data

3.2.1. Diagnostic Time

The average duration of evolution of the signs before the diagnosis was 23 months with extremes of 1 month and 60 months.

3.2.2. Reasons for Seeking Care

The main reasons for seeking care during connective tissue diseases were dominated by general symptoms: anorexia (92.2%), weight loss (82.9%), fever (82.9%) and asthenia (Table 5). The guiding symptoms were mainly arthralgia and skin lesions (Table 5).

In vasculitis, the main symptoms were anorexia (100%), weight lost (90.0%), fever (90.0%) and asthenia (90.0%) (Table 5).

Arthralgia was significantly more frequent in connective tissue diseases compared

Table 3. Distribution of systemic autoimmune diseases by living and caring area.

	Living area	Caring area
Atlantic	40 (19.70%)	3 (1.47%)
Littoral	76 (37.44%)	136 (67.00%)
Oueme	50 (24.63%)	50 (24.63%)
Plateau	7 (3.44%)	-
Mono	3 (1.47%)	-
Couffo	1 (0.49%)	-
Zou	11 (5.41%)	9 (4.43%)
Hills	1 (0.49%)	-
Borgu	5 (2.46%)	5 (2.46%)
Donga	1 (0.49%)	-

Table 4. Distribution of systemic autoimmune diseases by care service.

Care services	Numbers (%)
Internal Medicine	103 (50.74%)
Dermatology	57 (28.08%)
Rheumatology	37 (18.23%)
Nephrology	6 (2.96%)

Table 5. Frequency of key reasons for consultation.

Reason for consultation	Connective tissue disease N = 193 n (%)	Vasculitis N = 10 n (%)	p
Arthralgia	101 (54.1%)	0 (0.0%)	<0.0012
Myalgia	2 (1.1%)	0 (0.0%)	0.74
Dyspnea	4 (2.2%)	0 (0.0%)	0.64
Muscular weakness	2 (1.1%)	0 (0.0%)	0.74
Dysphagia	3 (1.6%)	0 (0.0%)	0.69
Pruritus	10 (5.5%)	0 (0.0%)	0.45
Skin lesion	24 (13.1%)	5 (50.0%)	0.009
Anorexia	178 (92.2%)	10 (100%)	0.35
Weight loss	160 (82.9%)	9 (90%)	0.55
Fever	160 (82.9%)	9 (90%)	0.55
Asthenia	139 (72.0%)	9 (90%)	0.21

to vasculitis in which no arthralgia was reported ($p < 0.05$). Skin lesions were significantly more observed during vasculitis ($p < 0.05$).

Table 6. Treatment received by patients according to systemic autoimmune disease group.

	Connective tissue disease N (%)	Vasculitis N (%)	p
Corticosteroids	128 (66.3%)	5 (50.0%)	0.28
Hygienic and dietary measures	69 (35.8%)	5 (50.0%)	0.36
Hydroxychloroquine	44 (22.8%)	0 (0.0%)	0.08
Methotrexate	36 (18.7%)	0 (0.0%)	0.13
Dermocorticoids	5 (2.6%)	0 (0.0%)	0.60
Cyclophosphamides	4 (2.1%)	0 (0.0%)	0.64
Articular corticoid infiltration	3 (1.6%)	0 (0.0%)	0.69

Table 7. Evolution under treatment according to the systemic autoimmune disease.

	Connective tissue disease N (%)	Vasculitis N (%)	p
Favorable	140 (72.5%)	8 (80.0%)	0.60
Complications	47 (24.4%)	1 (10.0%)	0.29
Death	6 (3.1%)	1 (10.0%)	0.24

3.2.3. Therapeutic Data

The management was essentially medical. Anti-inflammatory drugs, especially corticosteroids, were the most commonly used (Table 6). No patient had received biotherapy. Corticosteroids and dietary measures have been proposed for both for connective tissue disease and vasculitis ($p > 0.05$). These last two treatments were the only ones prescribed for vasculitis.

Hydroxychloroquine and methotrexate were the most widely used immunomodulators for background treatment in connective tissue diseases (Table 6).

Under treatment, the evolution was globally favorable in cases of connective tissue disease (72.5%) and vasculitis (80.0%) (Table 7). However, seven (07) cases of death were reported (Table 7). There was no significant difference in the course of vasculitis compared to connective tissue disease (Table 7).

4. Discussion

The hospital frequency of 0.13% obtained is lower than the frequency of 0.29% reported in Thiès [3]. This could be explained by the fact that our study was multicentric, unlike the Thiès study, which took place in the dermatology department of the Regional Teaching Hospital of Thiès. However, the low prevalence of systemic autoimmune diseases may be linked to under-reporting of cases, as not all populations use health services [3]. Many cases would therefore be unknown in the population; hence the need for a general population study.

The mean age of 44 in our study is higher than that found in the literature. Indeed, it had been found in 2017 in the internal medicine department of the National Teaching Hospital HKM of Cotonou, an average age of 38 years [2]. This could be explained by the fact that the majority systemic autoimmune disease in our study is rheumatoid arthritis in which the ages are higher than systemic erythematous lupus which was mostly found in the study conducted in internal medicine at National Teaching Hospital HKM.

We observed a female predominance in accordance with the literature, with a sex ratio of 0.29. These results are in agreement indeed, with the studies of Agbodandé *et al*. in 2017 [2] in Benin and Ouédraogo *et al*. in 2009 in Burkina-Faso [4] which showed a clear female predominance with a sex ratio of 0.29 and 0.16 respectively. Female predominance is indeed classical in systemic autoimmune diseases. It is explained by the influence of hormonal factors on the immune system. Indeed, estrogens stimulate the humoral response, whereas progesterone and androgens exert a suppressive effect on the immune response. Also high levels of 17-β estradiol have been recorded in patients with rheumatoid arthritis and systemic erythematous lupus [5] [6].

The mean time before diagnosis of the disease was 23 months. This is much longer than the 16 and 15 months respectively found by Zomalheto *et al.* and Agbodande *et al*. in Benin [2] [7]. This could suggest an increase in diagnostic difficulty or lack of knowledge of systemic autoimmune diseases by practitioners in our countries [1]. It should be noted, however, that the studies by Agbodandé *et al*. and Zomalhèto *et al*. were carried out only in Cotonou where access to immunological tests and specialists is easier than in the other areas of Benin

The circumstances of discovery were variable. The dominated reasons for consultation in our study were arthralgia and skin lesions. This agrees with the findings of Leye *et al.* in Dakar [8] and Konan *et al.* in Abidjan [5], but differs from the results of studies carried out in internal medicine at the National Teaching Hospital HKM in Cotonou, where arthralgia came in second place behind prolonged fever [2] [9]. As systemic lupus is the dominant pathology in these studies reported at the National Teaching Hospital HKM, fever is indeed a frequent symptom during this disease, often preceding a visceral attack [10]. Fever was found in 83.3% of the patients in our cohort at the time of diagnosis, as well as an altered general condition syndrome (asthenia, anorexia and weight loss).

The arthralgias that were the recurrent complaint are often a sign of appeal and present certain specificities that sometimes allow to distinguish a connectives tissue disease from another pathology. They can be severe and justify early aggressive treatment so as to avoid major handicaps [11]. Skin lesions appear first in other studies and are dominated by scalp lesions [3] [12].

Physical manifestations were dominated by osteoarticular (60.90%) and mucocutaneous (50.50%) manifestations, contrary to the data of Burkina Faso [4] where cutaneous manifestations were predominant. This result is in the same

register as the data obtained in Benin [2], with rheumatological manifestations in first place. These joint manifestations, ranging from simple arthralgia to true arthritis, can inaugurate the disease, as can skin lesions [13]. All this explains the clinical polymorphism of these diseases.

For treatment, corticosteroids were the most prescribed, followed by hydroxychloroquine and methotrexate. This is justified by the fact that these are the first-line treatments for systemic lupus and rheumatoid arthritis, the main systemic autoimmune diseases of our study.

73% of patients had a favorable progression. Spontaneous remissions usually occur in cutaneous or articular forms, much more rarely in renal, cardiac or neurological involvement [14]. This justifies the good therapeutic response observed in this study, since articular and cutaneous forms were the majority.

Complications were osteoarticular (RA joint deformities and arthritis flares), cardiac (pericarditis and endocarditis), cutaneous (scarring and necrosis alopecia), digestive (nausea and vomiting), pleuropulmonary (pleurisy) and one case of cortico-induced diabetes among patients with rheumatoid arthritis. No infectious complications were found in our series. The use of immunosuppressive drugs and powerful biological agents increases the occurrence of infectious complications [15] and the latter are the cause of high mortality. There would therefore be an improvement in the protocols for the use of immunosuppressors, thus contributing to the improvement of therapeutic results. The mortality recorded in our series was 3%.

The limitations of this study are primarily the retrospective nature of the data collection. This generated a lot of missing information. Also, the detection of specific autoantibodies could not be performed in some patients because of their high cost and unavailability in Benin. These limitations could hinder the extrapolation of the results.

5. Conclusion

Connectives tissue diseases are rare pathologies of young adults with a female predominance. They are dominated by rheumatoid arthritis and systemic erythematosus lupus. Arthralgia and skin lesions are their main modes of revelation. Immunologically, the most common autoantibodies are rheumatoid factor and antinuclear antibodies. Under conventional treatment, complications are few and mortality is low.

Conflicts of Interest

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

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