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Research Article

Systemic Lupus Erythematosus and Its Complications: An Underdiagnosed Disease in Chad

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Abstract

Introduction: Systemic lupus erythematosus is a nonspecific autoimmune disease of unknown cause. The clinico-biological manifestations and the progressive profile are variable. The objective of this study was to describe the epidemiological, diagnostic, therapeutic and progressive aspects of systemic lupus erythematosus at the Renaissance and National Reference university hospitals in N'Djamena.

Methodology: This was a cross-sectional and descriptive study running from January 1, 2019 to December 31, 2021 and which covered all the files of patients diagnosed with systemic lupus erythematosus according to the ACR (1997) or EULAR/ACR (2019) criteria).

Results: In total, 13 patients were included. The hospital prevalence was 1.3%. The average age was 32 years with [14 and 68 years] and a sex ratio of 0.44. General signs were found in 11 patients (84.61%). This involved deterioration of general condition in 8 cases (61.5%), arterial hypertension in 2 patients (15.4%). There were polyarthralgia's in 61.5% (n=8), 15.4% (n=2) generalized myalgias and 1 case of wrist arthritis (7.7%). Malar erythema represented 30.8% (n=4). Renal complications were present in 46.2% (n=6). This involved proteinuria greater than 500 mg/24 hours (46.2%) and hematuria in 15.4% (n=2). Renal function was disturbed in 5 patients (38.5%). The histology carried out after the renal biopsy in the 6 patients with renal damage revealed class I lupus nephropathy in 7.7% (n=1), class III lupus nephropathy in 15.4% (n= 2) and lupus nephropathy class IV in 23.1% (n=3). All patients were on hydroxychloroquine and corticosteroid therapy. Induction treatment in lupus nephropathy consisted of the administration of azathioprine in 38.5% (n=5). The dosage was 2 mg/kg/24 hours. The outcome at 6 months was unfavorable with the occurrence of 5 deaths in patients with lupus nephropathy. The causes of death were septic shock (15.4%), hypovolemic shock due to heavy hemoptysis (7.7%), massive pulmonary embolism (7.7%) and one undocumented case (7.7%). There were 5 cases of remission (38.5%), 2 cases of relapses (15.4%) and one patient lost to follow-up (7.7%).

Conclusion: Lupus is an underdiagnosed pathology in Chad. Its hospital prevalence is 1.3%. Its clinical expression is polymorphic and dominated by arthrocutaneous involvement. Renal complications are fatal for patients.

Keywords: Systemic Lupus Erythematosus, Renal Damage, Rheumatic Damage, Chad

Introduction

Systemic Lupus Erythematosus (SLE) is a protean inflammatory autoimmune disease caused by a dysregulation of the immune system whose etiology remains unknown [1]. It is characterized immunologically by the presence of numerous more or less frequent anti-nuclear autoantibodies [2,3]. It is a pathology of young women, particularly in the age group between 20 and 40 years old. It is much more common in the West Indian, African-American and Hispanic-American populations [4]. In the USA the overall prevalence of the condition is estimated at 40 to 50

per 100,000 with a clear predominance among black American populations [5]. A few series were subsequently described in several African countries [6-7]. Renal damage constitutes one of the most frequent and severe visceral manifestations of SLE. This high morbidity and mortality is due to the consequences of chronic renal failure and/or the toxicity of immunosuppressive treatment [8,9]. Renal damage affects 10 to 40% of patients. The diagnosis is histological and biopsy must be performed if proteinuria is greater than 500 mg/day. The severe form (proliferative glomerulonephritis with class III and IV A or A/C activity of the ISN/RPS 2003 classification) is found in half of the cases and jeopardizes the renal functional prognosis [10]. Renal damage determines the severity of the prognosis [11]. In the United States, in a series that included 1378 patients, the prevalence of lupus kidney disease in the year following the diagnosis of lupus was 32%. Lupus nephropathy is defined by proteinuria of more than 0.5 g/24 h, urinary sediment abnormalities or serum creatinine greater than 133 mmol/l [12]. In a descriptive study of 553 cases, carried out in the Great Lakes region, lupus nephropathy represented 4.5% of cases [13]. In Chad, lupus is underdiagnosed. No studies have been conducted including lupus patients. This is why we initiated this work in the 2 large hospitals of N'Djamena in order to determine the epidemiological, clinical, paraclinical, therapeutic and evolving profile of SLE in our context.

Methodology

This was a cross-sectional study, with a descriptive aim carried out at the Renaissance University Hospital and the National Reference University Hospital of N'Djamena. These are the 2 reference hospitals in N'Djamena. The study took place over a period of 3 years (January 1, 2019 to December 31, 2021). The study focused on all patients of both sexes who consulted consecutively in the internal medicine and nephrology departments of the 2 university hospitals. Included in the study were all patients whose diagnosis of lupus had been made according to the criteria of the EULAR/ACR 2019 classification (ACR) or the ACR 1982 classification criteria, updated in 1997. Lupus nephropathy had been retained in the presence of proteinuria greater than 0.5 g/d, an abnormality of the urinary sediment or renal failure with an unexplained rise in serum creatinine. The variables were sociodemographic, clinical, paraclinical, therapeutic and progressive. We collected and collected the data using a pre-established form for the purposes of the study. The necessary information was collected from files and consultation registers. The data was entered using Word and Excel 2019 software and analyzed using SPSS version 26 software (Statistical Package for Social Sciences). The results were presented in the form of tables and figures. Quantitative data were expressed as medians, means ± standard deviation and qualitative variables as percentages. The Chi-square test was used for the comparison of qualitative variables and the Student t test for the comparison of quantitative variables. The informed consent of all patients as well as the agreement of the hospital administration had previously been obtained to carry out this work.

Results

Out of a total of 956 patients followed during the study period, 13 cases of lupus were included, representing a hospital prevalence of 1.3%. There were 9 women (69.2%) and 4 men, for a sex ratio of 0.44%. The average age was 32 years with extremes of 14 and 68 years. The most represented age group was between 20 and 29 years old. The consultation time was 2-6 months in 46.2% (n=6). Ten patients (77%) were admitted to an outpatient clinic and 3 patients (23.1%) were admitted to the emergency room. General signs were found in 11 patients (84.61%). This involved deterioration of general condition in 8 cases (61.5%), high blood pressure in 2 patients (15.4%) and fever in 3 cases (23.1%). On the renal level, 3 patients (23.1%) presented renal edema such as morning puffiness of the face. Rheumatological manifestations were noted in 61.5% (n=8). It was polyarthralgia in 61.5% (n=8), generalized myalgia in 15.4% (n=2) and 1 case of wrist arthritis (7.7%). Dermatological signs were found in 69.2% (n=9). They varied greatly in their forms. Malar erythema represented 30.8% (n=4). The skin damage of the patients included was summarized in Table 1.

Clinical Manifestations	Effective (n)	Percentage (%)
Malar erythema	**4**	**30.8**
Alopecia	3	23.1
Mouth ulceration	3	23.1
Thrombocytopenic purpura	2	15.4
Photosensitivity	2	15.4
Bullous skin lesion	1	7.7
Hypopigmented macule	1	7.7
Hyperpigmented macule	1	7.7
Thoraco-abdominal erythema	1	7.7

Table 1: distribution of patients according to dermatological manifestations.

Renal complications were present in 46.2% (n=6). This involved proteinuria greater than 500 mg/24 hours (46.2%) and microscopic hematuria in 15.4% (n=2). Renal function was disturbed in 5 patients (38.5%). Table 2 summarizes the renal abnormalities.

Clinical signs	Effective (n)	Percentage (%)
Proteinuria	**6**	**46.2**
Renal type edema	5	38.5
Hypertension	2	15.4
Hematuria	2	15.4
Aseptic leukocyturia	1	7.7
Elevation of serum creatinine	5	38.5
• Acute kidney injury	3	23.1
• Chronic renal failure	2	15.4

Table 2: distribution of patients according to renal manifestations.

Five patients (38.5%) had pulmonary manifestations such as fluid pleurisy in 3 cases (23.1%) and hemoptysis in 2 cases (15.4%).

Hematological abnormalities were observed in five patients (38.5%). These were anemic syndrome 38.5% (n=5), vascular purpura 15.4% (n=2), epistaxis 15.4% (n=2) and axillary lymphadenopathy in 7, 7% (n=1). Ascites associated with abdominal pain, pericarditis and mood disorders were found in respectively 23.1% (n=3); 23.1% (n=3) and 15.4% (n=2). C reactive protein (CRP) was measured in all patients. It was increased in 69.2% (n=9). On the blood count, 11 patients (84.6%) presented normocytic normochromic anemia; 8 patients (61.5%) had leukopenia and 3 cases of thrombocytopenia (23.1%). Two patients (15.4%) had leukocytosis with predominantly polynuclear neutrophils. The entry points for these infections were cutaneous (n=1) and urinary (n=1). Immunologically, serum complement was measured in the 6 patients who had lupus nephropathy. The C3 and CH50 fractions were lowered. Immunological abnormalities are noted in Table 3.

Immunological tests	Effective (n)	Percentage (%)
Anti-nuclear antibody	**13**	**100**
• Positive	11	84.6
Speckled	7	53.8
Homogeneous	4	30.7
Negative	2	15.4
Anti-native DNA antibodies	**13**	**100**
• Positive	9	69.2
• Negative	4	30.7
Anti-Sm antibodies	5	38.5
• Positive	3	23.1
• Negative	2	15.4
Anti-SSA antibodies	**4**	**30.7**
• Positive	4	30.7
• Negative	0	0
Anti-SSB antibodies	**1**	**7.7**
• Positive	1	7.7
• Negative	0	0
Anti-cardiolipin antibodies	**2**	**15.4**
• Positive	2	15.4
• Negative	0	0

Table 3: distribution of patients according to immunological abnormalities.

Viral B, C and HIV serologies were negative in all patients. Histology performed after the renal biopsy (n=6) found class I lupus nephropathy in 7.7% (n=1), class III lupus nephropathy in 15.4% (n=2) and class lupus nephropathy IV in 23.1% (n=3). Therapeutically, hydroxychloroquine was prescribed in 8 patients (61.5%), including the 6 patients with kidney damage. Doses ranged from 200 to 600 mg per 24 hours. Corticosteroids were initiated in all patients (100%). The oral dosage was 0.5 to 1 mg per kg per 24 hours in patients who did not have renal damage. The 5 patients (38.5%) who presented active proliferative lupus nephropathy (classes III and IV) received bolus methylprednisolone at a rate of 10 mg/kg/day for 3 days followed by oral corticosteroid therapy at a dose of 1 mg/kg/day. Induction treatment in lupus nephropathy consisted of the administration of azathioprine in 38.5% (n=5). The dosage was 2 mg/kg/24 hours. Gastric dressings were administered in 11 patients (84.6%). The outcome at 6 months was unfavorable with the occurrence of 5 deaths in patients with lupus nephropathy. The causes of death were septic shock complicating severe pneumonia (15.4%), hypovolemic shock due to heavy hemoptysis (7.7%), massive pulmonary embolism (7.7%) and one undocumented case (7.7%). There were 5 cases of remission (38.5%), 2 cases of relapses (15.4%) and one patient lost to follow-up (7.7%).

Discussion

During this study, which is a first in the field of autoimmune disease in Chad, we were limited by the weakness of the sample and by the absence of an adequate technical platform which would have allowed us to carry out the immunological and histological examinations. All autoimmunity and renal histology examinations were performed in specialized centers in France (immunology) and Morocco (renal histology). In this study, the female gender predominated with 69.2% with an average age of 32 years. This female predominance is described in most African series [14-

19]. The predominance of the disease in women suggests the intervention of a hormonal factor (estrogens) because lupus flares are triggered by pregnancy and the postpartum period, as well as by the estrogen-progestin pill [20]. The age group most affected in the population of this study was that between 20 and 29 years old (46.20%). These results are consistent with literature data, particularly in Cameroon and Mali [15,21] which describe the female prevalence of the disease and its maximum during periods of genital activity, particularly in the age group between 20 and 40 years [4]. The polymorphic presentation of SLE could explain consultation delays in specialized centers (46.2% in our work). In Benin the time between the appearance of the first sign and the consultation was 15 months [6] and 43.5 months in Niger [22]. Rheumatological signs were observed in 8 patients (61.5%), like Tunisia [23] and Ivory Coast [24]. Rheumatological manifestations are almost constant (60 to 80%) and are often indicative of lupus disease [25]. In our work, skin damage is present in nearly 70% as the results found in Benin [6] and Senegal [26] with respectively 70.7% and 79.4% of cases. Dermatological manifestations are common during SLE in 80% of cases, triggered or aggravated by exposure to the sun [27]. Renal complications can reveal lupus disease in 25 to 70% of cases [17]. Proteinuria, urinary sediment abnormalities or an unexplained elevation in serum creatinine symbolize renal damage in lupus. This was the case for 46.1% of patients with renal complications in our series, compared to 39% of those in France [28] and 45.9% in Morocco [16]. On the other hand, in Senegal, due to their retrospective study spread over a period of 10 years, the prevalence of lupus nephropathy was higher with 69% of cases [29]. Arterial hypertension reported in 18 to 52% of published cases [30], was observed in 15.4% of patients in our study. The presence of even discrete markers of renal damage in lupus should indicate a renal biopsy whose significance is diagnostic, therapeutic and prognostic. Therapeutic decisions based on renal histology can improve patient survival. The active proliferative classes (class III and IV) are the most frequent in our results as in the French [28] and Senegalese [29] series. In the literature, class IV is the most common followed by class III [31]. We have performed few kidney biopsies because we do not have a specialized anatomical pathology unit and the cost of transferring biopsy samples abroad remains high. In this study the hematological manifestations consisted mainly of anemia (84.6%) probably attributable to inflammation. The same goes for leukopenia, which is noted in 20 to 80% of cases in the literature [32]. Usually, it is lymphopenia with or without neutropenia. The digestive manifestations during SLE are polymorphic and have different prognoses. The most common disorders are mesenteric vasculitis, protein-losing enteropathy or acute or chronic pancreatitis which is exceptional [33]. In our case, these digestive complications were not found. Cardiovascular manifestations, often subclinical, contribute to the morbidity and mortality of lupus [11]. This was the case in our work where pericarditis was present in 2 patients. Most of the time they occur during the progression of the disease. The significant frequency of these cardiac disorders and their sometimes torpid nature justify a rigorous clinical examination and the performance of a systematic electrocardiogram and echocardiography in all lupus patients. Therapeutically, all patients benefited from corticosteroid therapy combined with azathioprine as maintenance treatment in 23.1% of cases. They are indicated in the treatment of visceral manifestations, particularly lupus nephropathy. However, it should be noted that the non-compliance with international protocols in the treatment of patients is simply explained by the unavailability of immunosuppressants in Chad. In terms of progression, 5 patients suffering from lupus nephropathy died, corroborating data from the literature where the prognosis of lupus is often clouded by the severity of the kidney damage [11]. This should encourage the early initiation of adequate immunosuppressive treatment according to recommendations and close monitoring of markers of lupus progression, particularly in patients with renal damage.

Conclusion

An unpredictable systemic autoimmune disease evolving in flares interspersed with remissions, lupus is remarkable for its significant clinical polymorphism. SLE affects young adults with a female predominance. Clinical manifestations are dominated by general and dermatological manifestations, followed by rheumatological, renal and hematological manifestations. Not all patients were able to benefit from the systematic search for immunological markers, due to their relatively high cost. Treatment is mainly based on corticosteroid therapy, synthetic antimalarials and immunosuppressants. In our context, the high mortality was explained by the severity of the kidney damage and by inadequate treatment due to lack of available drugs. Adequate care and regular monitoring are the pillars of improving the survival of these patients in Chad.

Conflict of interest

The authors declare that they have no conflict of interest.

References

1. Buxeraud J (2016) Le lupus érythémateux systémique. Actualités pharmaceutiques 55: 45-47.
2. Franklyn K, Lau CS, Navarra SV, Louthrenoo W, Lateef A, et al. (2016) Definition and initial validation of a lupus low disease activity state (LLDAS). Annals of the rheumatic diseases 75: 1615-1621.
3. Yu C, Gershwin ME, Chang C (2014) Diagnostic criteria for systemic lupus erythematosus: a critical review. Journal of autoimmunity 48: 10-13.
4. Alarcon GS, Bastian HM, Beasley TM, Roseman JM, Tan FK, et al. (2006) Systemic lupus erythematosus in a multi-ethnic cohort (LUMINA): contributions of admixture and socioeconomic status to renal involvement. Lupus 15: 26–31.
5. Mccarty DJ, Manzi S, Medsger Jr TA, Ramsey-Goldman R, Laporte RE, et al. (1995) Incidence of systemic lupus erythematosus race and gender differences. Arthritis & Rheumatism: Official Journal of the American College of Rheumatology 38: 1260-1270.

6. Ka MM, Diouf B, Mbengue M, Kane A, Wade B, Diallo S, et al. (1998) Aspects évolutifs du lupus érythémateux systémique à Dakar. A propos de 30 cas. Bull Soc Path Ex 91: 306–308.

7. Cisse M, Dia D, Dieng MT, Diouf B, Ka EF, Ka MM, et al. (2008) La néphropathie lupique au Senegal : a propos de 42 cas. Saudi J Kidney Dis Transpl 19: 470-474.

8. Hiraki LT, Feldman CH, Liu J, Alarcon GS, Fischer MA, Winkelmayer WC (2012) Prevalence, incidence, and demographics of systemic lupus erythematosus and lupus nephritis from 2000 to 2004 among children in the US Medicaid beneficiary population. Arthritis Rheum 64: 2669-2676.

9. Borchers AT, Keen CL, Shoenfeld Y, Gershwin ME (2004) Surviving the butterfly and the wolf: mortality trends in systemic lupus erythematosus. Autoimmun Rev 3: 423-453.

10. Raimbourg Q, Daugas E (2019) Atteintes rénales du lupus, Néphrologie & Thérapeutique 15: 174-189.

11. Hajji M, Harzallah A, Kaaroud H, Ben Hamida F, Barbouch S, Kheder A (2014) Les facteurs prédictifs de mortalité au cours du lupus. Néphrologie & Thérapeutique 10: 275.

12. Kasitanon N, Magder LS, Petri M (2006) Predictors of survival in systemic lupus erythematosus. Medicine 85: 147.

13. J. Safari (2015) Néphropathie lupique : étude descriptive à propos de 553 cas et éléments pronostiques à 12mois de suivi au CHR des Grands-Lacs, Posters : néphrologie / Néphrologie & Thérapeutique 11: 338-406.

14. KA MM, DIOP MM, Ablaye L, Yakhame L, TOURE PS, BERTHE A, et al. (2017) La problématique des Maladies Auto-immunes en Afrique. Revue Africaine de Médecine Interne 4: 7-8.

15. Genga EK, Shiruli BC, Odhiambo J, Jepkorir S, Omondi EA, Otieno FO, et al. (2015) Clinical characteristics of patients with systemic lupus erythe-matosus in Nairobi, Kenya 3.

16. Cisse M, Dia D, Dieng MT, Diouf B, Ka EF, Ka MM, et al. (2007) La nephropathie lupique au Senegal : a propos de 42 cas. Dakar méd 52: 1261056.

17. Mahamat Abderraman G, Ibrahim H, Fotclossou T, Ka EHF, Niang A, Diouf B, et al. (2014) La néphrologie au Tchad : ses premiers pas (unité d'hémodialyse - hôpital général de référence nationale N'Djamena Tchad). Néphrologie & Thérapeutique 10: 393.

18. Fava A, Petri M (2019) Systemic lupus erythematosus: diagnosis and clinical management. Journal of Autoimmunity 96: 1-13.

19. Meyer O (2005) Lupus érythémateux systémique. EMC-Rhumatologie-Orthopédie 2: 1-32.

20. Contin-Bordes C, Lazaro E, Pellegrin J-L, Viallard J-F, Moreau J-F, Blanco P (2009) Lupus érythémateux systémique : de la physiopathologie au traitement. La Revue de Médecine Interne 30: H9-13.

21. KHALIL G, HADDAD C (2006) Abrégé de Maladies Systémiques. 1iere édition. Liban.

22. Daou M, Moussa YS, Brah S, Hamadou A, Ousmane MKL, Beidou SS, et al. (2022) Aspects épidémiologique, clinique, thérapeutique et évolutif du lupus érythémateux systémique à Niamey. Revue Africaine de Médecine Interne 9: 22-29.

23. Keita K, Kaya AS, Tighanka NKT, Traore D, Sy D, Traore AK (2020) Lupus érythémateux systémique : aspects épidémiologiques, cliniques, thérapeutiques et évolutifs dans le service de médecine interne au CHU du Point G (Mali). Revue Africaine de Médecine Interne 7: 7-15.

24. Cojocaru M, Cojocaru IM, Silosi I, Vrabie CD (2011) Manifestations of systemic lupus erythematosus. Maedica 6: 330.

25. Siar N, Akasbi N, Harzy T, Zahi S, Mahir L, Lmidmani F, et al. (2018) Diagnostic et traitement des manifestations rhumatologiques du lupus. Rev Mar Rhum 2018: 3-9.

26. Phan-Hug F, Theintz G (2007) Les maladies auto-immunes. Rev Med Suisse 3: 974-979.

27. Francès C, Barète S, Piette JC (2008) Manifestations dermatologiques du lupus. La Revue de Médecine Interne 29: 701-709.

28. Lateef A, Petri M (2017) Systemic lupus erythematosus and pregnancy. Rheumatic Disease Clinics 43: 215-226.

29. Harouna H, Aboudib F, Bouissar W, Echchilali K, Moudatir M, Alaoui F-Z, et al. (2016) Lupus érythémateux systémique : profil digestif. La Revue de Médecine Interne 37: A239.

30. Zoubeidi H, Daoud F, Aydi Z, Baili L, Dhaou BB, Boussema F (2014) Manifestations hépatiques au cours du lupus érythémateux systémique. Abstracts/La Revue de Médecine Interne 86: 486-493.

31. Anniche H, Benjellou H, Zaghba N, Yassine N (2020) Les manifestations respiratoires du lupus érythémateux disséminé. Revue Des Maladies Respiratoires Actualités 12: 247.

32. Karras A (2012) Atteinte rénale du lupus érythémateux disséminé. La Presse Médicale 41: 260-266.

33. Park MH (2006) International Society of Nephrology/Renal Pathology Society 2003 Classification of Lupus Nephritis. The Korean Journal of Pathology 40: 165-175.