Research article

Clinical characteristics of patients with systemic lupus erythematosus in Nairobi, Kenya

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Abstract

Background: Systemic lupus erythematosus (SLE), a chronic multisystem autoimmune disease with a wide spectrum of manifestations, shows considerable variation across the globe, although there is data from Africa is limited. Quantifying the burden of SLE across Africa can help raise awareness and knowledge about the disease. It will also clarify the role of genetic, environmental and other causative factors in the natural history of the disease, and to understand its clinical and societal consequences in African set up.

Objective: To determine the clinical profile of SLE patients at a tertiary care centre in Nairobi, Kenya.

Methods: Case records of patients who were attending the Nairobi Arthritis Clinic seen between January 2002 and January 2013 were reviewed. This was a cross-sectional study done on 100 patients fulfilling the 2012 Systemic Lupus Collaborating Clinics (SLICC) criteria for SLE attending the Nairobi Arthritis Clinic, Kenya. The patients were evaluated for socio-demographic, clinical and immunological manifestations and drugs used to manage SLE.

Results: Hundred patients diagnosed with SLE were recruited into the study. Ninety seven per cent of the study participants were female with a mean age of 36.6 years. Thirty three years was the mean age of diagnosis. The mean time duration of disease was 3 years with a range of 0-13 years. There was extensive disease as many had multi-organ involvement. Majority (83%) of the study participants met between 4 and 6 manifestations for the diagnosis criteria for SLE. Non erosive arthritis and cutaneous disease were the commonest initial manifestation. The patients had varied cutaneous, haematological, pulmonary, cardiac, renal and neuropsychiatric manifestations. Antinuclear antibody (ANA) assay and anti-dsDNA was positive in 82% and 52%. Patients on steroids, non-steroidal drugs and synthetic disease modifying anti-rheumatic drugs were 84%, 49% and 43% respectively. None of the patients were on biologic disease modifying anti-rheumatic drugs.

Conclusions: In Nairobi, SLE is a multisystem disorder affecting predominantly young females. Polyarthritis and cutaneous disease were the most common clinical features. This is comparable to other studies done in black African population. We found a higher prevalence of haematological and lower rate of renal disease as compared to other studies done in black Africans. The ANA assay and anti-dsDNA positivity was lower than those in other studies on black Africans. Majority of the patients were on steroids.

Key words: SLE, Nairobi, Kenya

Introduction

Systemic Lupus Erythematosus (SLE) is a chronic inflammatory disease that has varied presentations that follow a relapsing and remitting course. It is characterized by immunologically mediated, clinical and serological phenomena. It may resemble any of a variety of infectious, inflammatory, nutritional, malignant and metabolic disorders. More than 90% of cases of SLE occur in women, frequently starting at childbearing age. Worldwide, the prevalence of SLE appears to vary by race. The highest rates of prevalence have been reported in Italy, Spain, Martinique, and the United Kingdom Afro-Caribbean population. The Centre's for Disease Control and Prevention (CDC) estimates a range between 1.8 and 7.6 per 100,000 persons per year in the continental United States[1]. In general, black women have a higher rate of SLE than women of any other race, followed by Asian women and then white women[2]. The contrast between low reported rates of SLE in black women in Africa and high rates in black women in the United Kingdom suggests that there are environmental influences[3]. The disease is thought to be less common in tropical Africa because of the high prevalence of tropical infectious diseases, particularly malaria. This phenomenon may be mediated by the presence of immunosuppressive mediators like tumour necrosis factor alpha and nitric oxide in patients with chronic infection[4, 5]. There is paucity of data on the rates of occurrence of SLE in Africa, although several centres have reported their experience with SLE. Other likely contributors are that of poor

access and infrastructure of health services has led to under diagnosis in Africa.

The pattern of manifestations associated with SLE may differ according to racial and ethnic characteristics. Data from United Kingdom show that the definitive feature in 85% of patients was musculoskeletal and/or cutaneous[6]. A study by Cooper *et al*[7] analysed racial differences in the South-eastern USA and found more discoid lupus, more nephritis and a higher prevalence of anti-Sm and anti-RNP antibodies in black patients as well as less photosensitivity or mucosal ulcers in black patients. An Indian study of 100 patients showed that prolonged fever was the commonest presenting symptom. Other presenting symptoms with decreased frequency were arthralgia, haemolytic anaemia, ITP, malar rash[8]. A Zimbabwe study showed that renal involvement was more common and photosensitivity and serositis less common than in the United States[9]. The purpose of this study was to delineate the clinical pattern and laboratory features seen in patients with SLE in Nairobi, Kenya and to compare it with international data on lupus patients. The study also looked at the various therapeutic modalities used on these patients with SLE.

Material and Methods

After prior ethical clearance from the National Ethical Review Board, we reviewed the case records of 9975 patients attending the Nairobi Arthritis Clinic between January 2002 and January 2013. The study site is situated in Nairobi, the capital city of Kenya and serves as a tertiary referral centre. It not only serves the two million inhabitants of Nairobi but also patients from all over Kenya and the greater East and Central African Region. Medical records of patients with SLE were identified and 100 patients satisfying the revised International Systemic Lupus Collaborating Clinics (SLICC) criteria (2012) for SLE were recruited into the study. These patients were on regular follow-up at the Nairobi Arthritis Clinic. Relevant parameters retrieved from patient records included clinical data (age, sex, duration of symptoms, symptoms and clinical signs at diagnosis and during follow-up) and laboratory and radiology data (complete blood count, erythrocyte sedimentation rate, urine analysis, renal function tests, chest X-ray, and X-ray of both hands). Results of immunological investigations like Antinuclear Antibody Assay (ANA), anti-double stranded DNA (anti-dsDNA) were recorded from the file. Statistical methods: Categorical variables were presented as number (%) and continuous variables presented as mean and standard deviation. Data was analysed using SPSS version 21.0.

Results

Nine thousand nine hundred and seventy five patients were evaluated for SLE over a one year period. Ninety seven per cent of the study participants were females with a mean age of 36.6 years. Thirty three years was the mean age of diagnosis. The mean time duration of disease was 3 years with a range of 0-13 years (Table 1). Majority (83%) of the study participants met between 4 and 6 manifestations for the diagnosis criteria for SLE. Non erosive arthritis and cutaneous disease were the commonest initial manifestation. The patients had varied cutaneous, haematological, pulmonary, cardiac, renal and neuropsychiatric manifestations. ANA assay and anti-dsDNA was positive in 82% and 52% (Table 2). Patients on steroids, non-steroidal drugs and synthetic disease modifying anti-rheumatic drugs were 84%, 49% and 43% respectively. None of the patients were on biologic disease modifying anti-rheumatic drugs (Table 3).

Table 1: Socio-demographic characteristics

Variable	No. (%)
Age	
Mean (SD)	36.6 (10.7)
Min-Max	19.0-61.0
Sex	
Female	97 (97.0)
Male	3 (3.0)
Marital status	
Married	49 (49.0)
Single	48 (48.0)
Widowed	1 (1.0)
Missing	2 (2.0)
Level of education	
Primary	14 (14.0)
Secondary	31 (31.0)
College	49 (49.0)
None	1 (1.0)
Missing	5 (5.0)
Employment status	
Unemployed	42 (42.0)
Employed	32 (32.0)
Self-employed	22 (22.0)
Missing	4 (4.0)
Age at diagnosis of SLE	
Mean (SD)	33.0
Min-Max	11.0-56.0
Duration of SLE in years	
Mean (SD)	3.6
Min-Max	0.0-13.0

Table 2: Clinical characteristics

Variable	Cases
Number of criteria for diagnosis of SLE	
2	1
3	3
4	28
5	29
6	26
7	8
8	2
9	2
10	1
Positive ANA (Antinuclear antibody test)	
Positive	82
Negative	8
Not done	10
Positive Anti-ds DNA	
Positive	56
Negative	10
Not done	34
Presence of malar rash	54
Discoid rash	22
Photosensitivity	44
Oral ulcers	36
Non-erosive arthritis	90
Pleuritis and/or pericarditis	28
Renal disorder	24
History of neurologic disorder	19
Haematologic disorders	67

Table 3: Medications

Variable	Number of cases
Regular use of corticosteroids	84
Dosage	
Lower dose; <10mg/day	32
Medium dose; 10-20mg/day	45
High dose; >20mg/day	7
Hydroxychloroquine	77
Methotrexate	15
Azathioprine	27
Mycophenolate Mofetil.	12
Use of NSAIDs	49
Frequency	
Regular	25
Intermittent	2
Symptomatic	22

Table 4: Cumulative incidence of clinical and immunological manifestations of SLE in Kenya as compared to other series

	Jessop (South Africa)	Seedat (South Africa)	Dessein (South Africa)	Binoy (India)	Houman (Tunisia)	Wadee (South Africa)	Adelowo (Nigeria)	Ekwom (Kenya)	Doulla (Cameroun)	Genga (Kenya)
Year	1973	1976	1988	2003	2004	2007	2009	2013	2014	2015
Number	130	30	30	75	100	226		13	39	100
Articular	74%	97%	90%	89.3%	78%		87%	69.2	59%	90%
Skin	78%	73%	60%	64%	>63%	81%	73.8%	69.2	28.2	78%
Haematological	64.5%	15%	73%	26.71%				38.5	72%	67%
Renal	58%	87%	60%	33%	43%			43	17%	24%
ANA	90.8%	100%		93.3%	100%	99.1%	99.1%	76.9	86.1%	82%
Anti-Ds DNA				76%		41%	55.3%	38.5	73.5%	52%

Discussion

In this study about half of the study population were married with 94% of the study participants having received some formal education. There were 3 males and 97 females aged between 11-36 years. All 3 male patients were ANA and anti-dsDNA positive and showed muscular-cutaneous features similar to those seen in females. The female to male ratio was 32:1. This is in keeping with most literature that reports a female predominance ranging from 83–97% (excluding studies that recruited only female or male patients). The female preponderance is also seen in all these reports from Africa e.g Cameroun (F: M – 12:1); Zambia (29:0); Nigeria (10:1); South Africa (18:1); Tunisia (11.5:1); Kenya (13:0) [17, 21-23]. The use of exogenous hormones has been associated with lupus onset and flares, suggesting a role for hormonal factors in the pathogenesis of the disease[10]. The median age at diagnosis of this study population was 33 years. This compares to other studies done in for instance, South Africa (35 years); Kenya (34 years); Nigeria (33 years); Cameroons (38 years) [17, 21-23]. Several comparative studies have, however, shown that the peak age of onset is lower in black women[11-12]. The median age of disease onset in white women ranges between 37 and 50 years[13]. The mean age SLE onset in Africa mirrors studies from Asia range from 25.7–34.5 years, with patients in India (24 years), Malaysia (25.7 years) and Philippines (26.7 years) demonstrating earlier onset compared to patients in the other countries[14]. There was a long disease duration of the study subjects ranging from 0 to 13 years. This may explain the extensive disease seen in this population as many had multi-organ involvement. Majority (83%) of the study participants met between 4 and 6 manifestations for the diagnosis criteria for SLE.

The commonest clinical manifestations reported was articular disease at 90% of the cases. This finding is in keeping with data from elsewhere in African populations[15-17]. Skin manifestations were also common. Malar rash was commonest skin manifestation which is similar to studies from South Africa and India. Malar rash and arthritis were reported in 69.2% of Kenyan patients by Ekwom[22] in a study from Kenya. Adelowo *et al*[23] reported arthritis in 87% of their patients but had a lower frequency of malar rashes (21.2%); photosensitivity (9%); discoid rashes (43.9%). Doulla *et al*[24] reported arthritis as the most common feature in 59% and had lower rates of malar rash (15.4%) and discoid (5.1%). Photosensitivity has previously been reported to be less common in black patients as this is often subjectively assessed based on the experience of the patient apart from a study by Ekwom[22] who found 53% of patients in a Kenyan study Photosensitivity was reported lower in this study at 44%. This was however higher than the studies done elsewhere in Africa by Dessein *et al*[15]. Seedat *et al*[16], Wadee *et al*[17] from South Africa and Doulla *et al*[24] in Cameroon who reported 13% ,35% and 7.7% respectively (Table 4). Patients in this study had a low number of oral ulcers (36%). This is similar to a study by Wadee *et al*[17] and Ekwom *et al*[22]. Possible reasons for the low numbers are that this clinical feature may be missed as these are usually painless ulcers and may not be reported by the patients. There were low numbers for neurological disease (19%) and renal disease (24%). Doulla *et al*[24] found low numbers of neurological disease (10.3%) and renal disease (17%). The frequency of renal involvement varies in different populations studied with both ethnic and geographic variation reported (Table 4).

Renal disease in this study was lower than that reported in studies by others [15-18, 22] where they found rates >60%. Various studies have demonstrated a higher incidence of LN in black patients[19-20,22]. In a study done in Tunisia by Houman *et al*[21], 43% of patients were diagnosed with lupus nephritis. Renal biopsies and 24 hour protein excretion were not done in this patients thus may explain the low numbers. Wadee *et al*[17] also found low numbers of neurological disease. These numbers however represented only strokes, new onset seizures or psychosis. The prevalence of neurological disease is likely to be higher if commoner lesions like neuropathies were included in the study. Antinuclear antibody (ANA) assay and anti-dsDNA was positive in 82% and 52% respectively which was higher than what Ekwom[22] reported ANA at 76.9%. This is similar to Doulla *et al*[24] who reported ANA at 86.1%. These are lower than studies from South Africa on 226 patients reported ANA at 99.1% and anti-ds DNA at 55.3% and Nigeria on 95 lupus patients reported ANA at 95.7% and dsDNA-54.4%[17,23]. Majority of the patients were on steroids (84%). Disease modifying drugs used included hydroxychloroquine, azathioprine, methotrexate and mycophenolate mofetil at 77%, 27%, 15% and 12% respectively. Hydroxychloroquine has been reported as the most common drug of choice in SLE patients in Africa as seen by Ekwom[22] (92%) and Doulla *et al*[24] (69%). Possible reasons for the high usage is that hydroxychloroquine is recommended in international guidelines because of its affordability in our area. It is also known to have a positive effect in preventing end organ involvement[25]. About half of the patients were on regular non-steroidal anti-inflammatory drugs with 25% using them regularly, 22% symptomatic use and 2% intermittently used. There was low use of anti-platelet (4%) and statins (2%). Cyclophosphamide and B lymphocyte cell depletors which have been used in other case series of SLE mainly for lupus nephritis was absent in this study[22-24].

Conclusions

SLE is certainly not as rare in Kenya as previously thought. This study demonstrates that the demographic distribution of patients with SLE in Kenya mirrors that from other areas in the world although with a stronger female predominance, especially in the childbearing period. This was a well-educated population. The commonest manifestation of the disease is articular and muco-cutanueos disease. Majority of the patients had the disease long before diagnosis was made and this

resulted in multi-organ manifestations. The prevalence of neurological and renal disease is low in this population. ANA assay and anti-dsDNA was positive in 82% and 52% respectively. Majority of this study population were on steroids and hydroxychloroquine.

Recommendations

(i) SLE is not rare in Kenya. Diagnosis of SLE should be thought of in female patients of child bearing age presenting with multi-organ disease.
(ii) Studies on the severity of the disease as well as the response to available treatment and mortality are needed so as to assess its exact impact on SLE patients.

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Conflict of interest

The authors declare no conflicts of interest

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