Prevalence, clinical and serologic characteristics of systemic lupus erythematosus: multicentric study in Burkina Faso and African literature review

Sirs,

Systemic lupus erythematosus (SLE) is the most common of the connective tissue diseases. Most of the epidemiological findings available on this disease are from western studies (1, 2). SLE is thought to be common in black African patients; its prevalence varies from 197.2 to 517.5 per 100,000 persons in recent original studies (3, 4). In the study by Rees *et al*., the prevalence of SLE was 179.8 per 100,000 persons in Africans and 134.5 per 100,000 persons in Caucasians (3) though those studies were carried out in western countries, namely in the United Kingdom. The aim of our study was to report the prevalence, through a multicentre study, and to describe the characteristics of the disease in a country south of the Sahara.

It was a multicentre, retrospective study conducted over a period of 12 years from January 1st, 2006 to December 31st, 2017 in Burkina Faso. Four out of the six Teaching University Hospitals (TUH) of the country were included in the study. All the patients with SLE had undergone a comprehensive clinical examination with a rheumatologist, an internist or a dermatologist, some biological investigations, radiology and electrocardiography. We included patients with SLE who met the American College of Rheumatology criteria (ACR) (5).

Seventy-five patients were included during the period of the study. The population prevalence of SLE was 0.45 per 100,000 persons. Table I shows the prevalence of the disease according to the population studied. The average age of the patients was 34.2±10.5 years old with some extremes ranging from 9 to 62 years old. Seventy-one (94.7%) patients were female. The mean disease duration was 5.35±3.8 years with extremes of 3 months and 25 years. The rheumatological and dermatological manifestations were reported respectively in 64 patients (85.3%) and 62 patients (82.7%). Table II shows the distribution of patients according to the clinical manifestations. The antinuclear antibodies were positive in all our patients. The native anti DNA antibodies were present in 39 patients (52%). The Anti Sm antibodies were positive in 36 patients (48%) and the antibodies U1RNP in 26 patients. SLE was associated with antiphospholipid antibody syndrome in one patient.

The prevalence of SLE has not been studied in sub-Saharan Africa (1). The prevalence reported in the populations are the result of the studies carried out in European or American countries (1, 2). Thus, in the study of Rees and al, the prevalence of the SLE in black African subjects was 179.8 per 100,000 inhabitants and 134.5 per 100,000 inhabitants in the white subjects while among Caribbeans, the prevalence was 517.5 per 100,000 inhabitants with extremes of 398.5 and 660.8 per 100,000 inhabitants (3). However, it is important to note that the study by Rees *et al*. was based on black African populations living in the United Kingdom (3). The prevalence we are reporting in this study, is suggestive of the low prevalence of the disease in our country, whether the number is reported according to the entire population of the country (0.45 per 100,000) or to the cities of study (2.41 per 100,000). The environmental factors associated with SLE have not been taken into account in our study (6). However, the environment is known to influence the prevalence and the incidence of the disease. Gilkenson *et al*. showed in a comparative study that the autoimmunity of black Africans living in Africa (Sierra Leone) did not differ from that of their descendants living in the islands of South Carolina in the United States (population with a high prevalence of SLE) (7). In 1997, Adebajo had hypothesised a protective effect of malaria against autoimmune diseases to explain the low incidence of SLE in tropical Africa (8). Recent studies conducted on lupus murine models have shown that the malaria parasite provides protection against lupus by the direct attenuation of the B cell autoreactivity by modulating the expression of CXCL12/CXCR4 (9, 10).

Table I. Prevalence of SLE according to the population studied.

	Number of lupus cases	Number of inhabitants	Prevalence (for 100,000 inhabitants)
Population of Burkina Faso	75	16 608 682	0.45
Female	71	8 593 010	0.82
Male	4	8 015 672	0.05
Population of the study cities (Ouagadougou, Bobo-Dioulasso, Ouahigouya)	75	3 112 546	2.41

Table II. Distribution of the patients according to clinical manifestations.

	n.	%
Dermatological	64	85.3
Rheumatism	62	82.7
General	60	80
Renals (kidneys)	40	53.3
Cardiac (hearts)	17	22.7
Respiratory	17	22.7
Vascular	14	18.7
Digestive	14	18.7
Neuropsychiatric	13	17.3
Haematological	5	6.5

W.J. Tiendrebeogo[1]
C. Sompougdou[1]
F. Traoré[2]
F. Kaboré[1]
C. Sougué[3]
D.-D. Ouédraogo[1]

[1]Rheumatology Unit, Teaching University Hospital of Bogodogo, Ouagadougou, Burkina Faso;
[2]Dermatology Unit, Regional Teaching University Hospital of Ouahigouya, Burkina Faso;
[3]Internal Medicine Unit, Teaching University Hospital of Sanou Sourou, Bobo-Dioulasso, Burkina Faso.

Please address correspondence to:
Wendlassida J. Tiendrebeogo,
Rheumatology Unit,
Université Joseph Ki-Zerbo,
09 BP 88 Ouagadougou, Burkina Faso.
E-mail: t_joelle@hotmail.com

Competing interests: none declared.

References

1. REES F, DOHERTY M, GRAINGE MJ, LANYON P, ZHANG W: The worldwide incidence and prevalence of systemic lupus erythematosus: a systematic review of epidemiological studies. *Rheumatology* (Oxford) 2017; 56: 1945-61.
2. PONS-ESTEL GJ, UGARTE-GIL MF, ALARCON GS: Epidemiology of systemic lupus erythematosus. *Expert Rev Clin Immunol* 2017; 13: 799-814.
3. REES F, DOHERTY M, GRAINGE MJ *et al*.: The incidence and prevalence of systemic lupus eryrhematosus in the UK, 1999-2012. *Ann Rheum Dis* 2016; 75: 136-41.
4. JOHNSON AE, GORDON C, PALMER RG, BACON PA: The prevalence and incidence of systemic lupus eryrhematosusin Birmingham, England. Relationship to ethnicity and country of birth. *Arthritis Rheum* 1995; 38: 551-8.
5. HOCHBERG M: Updating the American College of Rheumatology revised criteria for classification of Systemic Lupus Erythematous. *Arthritis Rheum* 1997; 40: 1725-34
6. BARBHAIYA M, COSTENBADER KH: Environmental exposures and the development of systemic lupus erythematosus. *Curr Opin Rheumatol* 2016; 28: 497-505.
7. GILKESON G, JAMES J, KAMEN D *et al*.: The United States to Africa lupus prevalence gradient revisited. *Lupus* 2011; 20: 1095-103.
8. ADEBAJO AO: Low frequency of autoimmune disease in tropical Africa. Lancet 1997; 349: 361-2.
9. BADR G, SAYED A, ABDEL-MAKSOUD MA *et al*.: Infection of female BWF1 lupus mice with malaria parasite attenuates B cell autoreactivity by modulating the CXCL12/CXCR4 axis and its downstream signals PI3K/AKT, NFκB and ERK. *PLoS One* 2015; 10: e0125340.
10. AL-QURAISHY S, ABDEL-MAKSOUD MA, EL-AMIR A, ABDEL-GHAFFAR FA, BADR G: Malarial infection of female BWF1 lupus mice alters the redox state in kidney and liver tissues and confers protection against lupus nephritis. *Oxid Med Cell Longev* 2013; 2013: 156562.