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A screening of serological syphilis in Mauritania

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Summary

A survey aiming at assessing the frequency and the distribution of serological syphilis has been carried out on a sample of 6049 subjects aged 6–18 years in Mauritania. 33.4% of the samples had a reciprocal titer of 150 or more as determined by means of an immunofluorescence technique. However, frequencies in the different villages ranged from 7.5 to 47.6% and were strongly associated with the percentage of Black elements in the community. A significant difference was found between the age-groups 6–13 and 14–18, with a mean increase of 56%. These results suggest that an intervention program might be necessary in Mauritania.

Key words: treponematoses; Mauritania; sero-immunological survey.

Introduction

Mauritania is a country where the estimated 1,437,000 inhabitants (Demographic Yearbook 1980, U.N., New York 1982) are unevenly spread over a surface of 1,134,000 km^2. Only 23% of the population is urban. Therefore, in several regions far away from the main centres, on the coast or on the river Senegal, the rates of various bacterial, viral or parasitic diseases are underestimated or unknown. As the biotopes may vary significantly, it is difficult to extrapolate from one region to another (Monjour et al., 1983a).

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The frequency and the distribution of the treponematoses is poorly known making any project of eradication difficult to plan.

West-African treponematoses have been reported for Senegal (Basset et al., 1972; Ridet et al., 1979), Upper-Volta (Baylet, 1954; Fasquelle, 1971), Niger (Cirera et al., 1971) and Ivory Coast (Cirera et al., 1972a, 1972b, 1974). We have found that they are present to a significant extent in Mauritania.

Populations and Methods

Populations

As described elswhere (Monjour et al., 1983b) the population of the Islamic Republic of Mauritania is composed of two races. The black Mauritanians are sedentary and mainly live along the Senegal River, in the south, divided in many ethnic groups like Toucouleur, Sarakollé, Peuhl, Bambara, Ouoloff etc. The Moors of Arab-Berber origin live in the dry central, western and northern zones. Even when they put an end to their nomadic life, settling permanently in the permanent pastures near the river, the two races do not mix completely. Often the crowded house where the polygamous Toucouleur live physically faces the tent with the small monogamous Moorish family. The population is mixed in the maritime (Nouadhibou) or border (Rosso) towns as well as in Kiffa, or other relatively bigger centres midway between the river and the desert.

The survey

The survey was carried out in 27 towns and villages in 1973. All the children and adolescents of medium sized schools (140 pupils at most) like Dar-el-Barka and Gouraye, were surveyed. In larger centres 2 children out of 3 were randomly selected. We estimated that 2.5% of the registered pupils were absent for illnesses or being temporarily employed.

Antitreponematous antibodies were detected by means of an indirect immunofluorescence technique using the Nichols strain of *Treponema pallidum* from the testicles of infected rabbits (for the details of the method see Bourdillon et al., 1981). Reciprocal titers equal to 150 or higher were considered positive. Significance of the data was assessed by the χ^2 test when pertinent.

Results

The global prevalence of serological syphilis was 33.4% among the 6049 children (Table 1). The standard error of the estimate was less than 1%, but single prevalence estimates ranged widely from 7.5% at Chinguetti to 47.6% in Thekan. Median frequency was 37.2%. Low frequencies were found at Atar, Chinguetti, Nema and Kankossa, high frequencies at Rosso, Thekan, Toulde Boghe, Sarandougou, Thialgou, Lexerba, Diaguilil (Fig. 1).

In 16 centers prevalence was investigated also according to age. The prevalence of positive sera were respectively 27.6% and 41.7% in those aged 6–13 years ($n = 2931$) and in those aged 14–18 years ($n = 779$). This difference is statistically significant ($p < 0.001$). The increase in the older group averaged 56%, ranging from 23 to 166% (Table 1).

Frequencies as a function of sex, age and race were investigated in 7 centres. There was no marked difference between sexes, whilst a significant differ-

Table 1. Prevalence of serological syphilis in different age-groups and centres of Mauritania

Regions	Centres	Prevalences (%)		
		6–13 years	14–18 years	Total
Trarza	Rosso			41.8 (399)
	Thekan	45 (222)*	58.8 (51)	47.6 (273)
	Boutilimit			25 (160)
	Mederdra			31.2 (266)
Brakna	Toulde Boghe			46 (113)
	Sarandougou	37.8 (132)	49.2 (65)	41.6 (197)
	Boghe	34.3 (320)	54.7 (73)	38.1 (393)
	Thialgou			42.4 (132)
	Bababe	35 (140)	45.6 (46)	37.6 (186)
	Dar el Barka			22.9 (48)
Gorgol	Mounguel	35.1 (165)	44 (50)	37.2 (215)
	Rindiao-Sylla, Benilabe	37.5 (168)	48.4 (33)	39.3 (201)
	Diovol	34.1 (170)	46.5 (58)	37.2 (228)
	Kaedi			38.2 (439)
	Lexerba			45.6 (217)
Guidimaka	Selibaby	29 (258)	46.3 (69)	32.7 (327)
	Bouly	26.5 (98)	46.6 (30)	31.2 (128)
	Diaguilil	44.9 (187)	55.3 (56)	47.3 (243)
	Gouraye			30.7 (65)
Assaba	Kiffa	25.9 (127)	50 (44)	32.1 (171)
	Kankossa	7.8 (165)	20.8 (48)	10.7 (213)
Hodh Oriental	Nema	7.6 (195)	13.9 (43)	8.8 (238)
Baie du Levrier	Nouhadibou			37.2 (293)
Inchiri	Akjoujt			38.1 (207)
Adrar	Atar	7.1 (252)	14.2 (49)	8.3 (301)
	Chinguetti	7.1 (167)	9.3 (32)	7.5 (199)
Tagant	Tidjikda	27.2 (165)	37.5 (43)	28.9 (198)

* Figures in parentheses indicate number of subjects studied

ence of about 20% was found between races (Table 2) independently from the age group. Again, the frequency of positive sera was higher in the older group. The variability in the percentage of positive sera could be almost completely explained by their regression on the percentage of Arab-Berber inhabitants in each village ($r^2 > 0.90$ in both age groups, $p < 0.01$, Table 3).

Concerning the presence of yaws, pointed out in several contries of the Sahel Africa (OMS, 1982), we can only report that in this study no clinical evidence of this disease could be found. Conversely, clinical evidence of endemic syphilis was found in 102 out of the 6049 subjects studied.

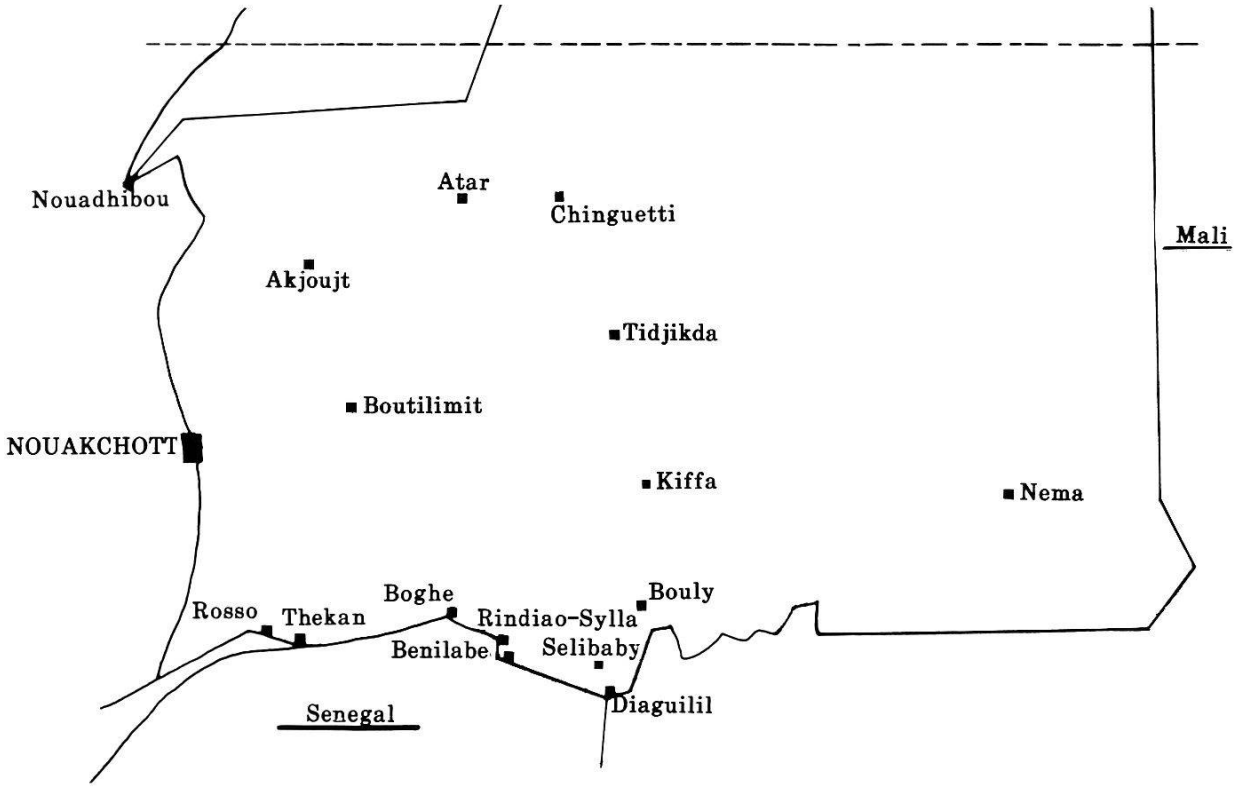

Fig. 1. Principal centres of the survey.

Table 2. Frequency of positive sera in different age-groups and races of Mauritania

Race	Age group	
	6–13 years	14–18 years
All races		
Number	1579	349
Positive	375 (23.7%)	130 (37.2%)
Blacks		
Number	723	171
Positive	255 (35%)	89 (52%)
Moors		
Number	856	178
Positive	120 (14%)	41 (23%)
A	21%	19%
CIA (95%)	17–25	9–29

Table 3. Percentage of Arab-Berber elements and percentage of positive sera in 7 selected villages of Mauritania

	6–13 years			14–18 years		
	% Arab-Berbers	N (total)	% pos. sera	% Arab-Berbers	N (total)	% pos. sera
Atar	83.3	252	7.1	81.6	49	14.2
Chinguetti	96.0	167	7.1	100.0	32	9.3
Tidjikda	54.5	165	27.2	53	32	37.5
Nema	82.5	195	7.6	76.7	43	13.9
Thekan	18.0	222	45	21.6	51	58.8
Boghe	37.5	320	34.3	34.2	73	54.7
Selibaby	29.0	258	29	29.0	69	46.3

Discussion

In 1975 the estimated population of Mauritania in the age group 5–19 totalled 462,000 (Demographic Yearbook 1979). Therefore, from our survey covering roughly 1.25% of the total population, we can infer that about 140,000 children and adolescents had serological syphilis in the country. Our estimate assumes that the Arab-Berber/Black ratio in the surveyed schools reflects that of the whole Mauritania. In fact, we found that high prevalences of serological syphilis were associated to high percentages of Black people in the communities. If, as it seems likely, the true global ratio is lower, our total number is under-estimated.

Although our survey suffered from the fact its locations where dictated by practical reasons and although our figures represent a rough estimate of the true prevalence, we think that sufficient grounds exist to state that treponematoses are an important health problem in Mauritania.

The existence of serological syphilis in children could be explained by a congenital infection or, more likely, by a non-venerial transmission. In certain biotopes, up to ⅓ of pediatric syphilis can be attributed to poor hygiene and promiscuity within the families (Baylet, 1954). The different sexual behaviours in the different ethnic groups should not be overlooked.

The indirect immunofluorescence technique we used is sensitive up to 200 times more than VDRL (Fribourg-Blanc, 1971). Due to the good quality of the antigen the decision to consider positive titers of 150 seems justified (Niel and Gentilini, 1970). In fact, an increase in the threshold of positivity to a titer of 450, would have resulted in a prevalence only a few percent points lower (29.9%).

It appears from the results reported here that some form of intervention against treponematoses is probably needed in Mauritania even to-day.

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