ENDEMIC SYPHILIS IN THE KAROO*

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In recent years a completely new concept of the treponematoses has evolved. There is today a steadily increasing recognition, continually supported by new developments, that the treponematoses should be regarded as a closely related group of infections which, under different environmental influences, may in different ways develop essentially similar or even identical clinical syndromes.[3]

The hypothesis of a single origin of the treponematoses probably as yaws in Equatorial Africa in palaeolithic times,[8,9] has made this concept even more acceptable.

The existence of free-living treponemata, the development of symbiosis between these free-living forms and the larger animals, and the dissemination in ancient times of these forms by *Homo sapiens* during his early migrations throughout the whole world have not only been suggested by several authors, but have actually also been proved by recent findings.[2,12]

It seems reasonable, therefore, to consider the treponematoses from the epidemiological point of view[3] as non-venereal treponemal infections occurring in endemic form in children and predominantly venereal infections occurring in sporadic form in adolescents.

To the first group belong the following endemic treponematoses:

(*a*) Endemic syphilis, comprising similar or identical conditions with different local names such as *bejel, njovera* and *dichuchwa.*
(*b*) Yaws, the endemic treponematosis of the wet tropics.
(*c*) Pinta, the endemic treponematosis occurring in Central America.

To the second group belongs venereal sporadic syphilis which occurs all over the world and is numerically less frequent than the endemic treponematoses.

This concept of treponemal infections is justified by the morphologically indistinguishable organisms; the close relationship in cross-immunity; the similar antigenic and immunogenic responses of the host, and the similar responses to the same drugs; the great epidemiological resemblance between the treponematoses because of the similar ecological factors; and the similarity of the measures required to control the infections.

ENDEMIC SYPHILIS

Syphilis has remained an ordinary communicable disease in several areas of the world and is transmitted non-venereally by direct contact and by indirect transfer of *T. pallidum* among children and adolescents through their play, and by drinking vessels and common eating and other household utensils under primitive, crowded, sub-standard conditions of living.[5]

Such so-called endemic syphilis is known under different names in different parts of the world, e.g. the *dichuchwa* of Bechuanaland,[27] *njovera* of Southern Rhodesia,[29] and the *bejel* of Syria and Iraq.[10] It is also found in many other parts of Africa, the Middle East and Asia.[30] In Western Europe it was still found until recent years in Yugoslavia.[4]

The following characteristics are common to all forms of endemic syphilis:[4,10,17,29] It occurs in communities with a high seropositivity rate and the causative organism is morphologically indistinguishable from *T. pallidum*. Seropositivity to the same flocculation and complement-fixation tests as syphilis is found. It occurs in communities living under poor economic and social circumstances with primitive sanitation and living conditions and is a disease of small communities, rare in cities. Although it may occur in any age-group it is found mainly among children, and it is a family disease—more than one case is usually found in a family. It is transmitted non-venereally and a primary chancre is exceptional, the commonest early lesions being mucous patches in the mouth and genital condylomata. Congenital syphilis seldom occurs. Nasopharyngeal ulceration, gummata of the skin and bone lesions are common to all and the cardiovascular and central nervous systems are very seldom involved. All the conditions respond well to penicillin and other antitreponemal drugs.

THE RICHMOND SURVEY

The following survey, done while I was still in practice in Richmond, CP, was prompted by the fact that so many cases of endemic syphilis were seen. Accurate statistical data were ensured by the fact that it was an unopposed practice.

Richmond is a small Karoo‡ town 400 miles from Cape Town, situated on the national road to the north. The district covers an area of 2,827 sq.miles. The non-White population consists of 4,800 Coloureds and 1,700 Bantu.

The survey was done over a 9-month period from 1 January to 30 September 1967.

To determine the general seropositivity of the non-White population, blood samples of all patients admitted to the local hospital were sent to the Government Laboratory, Cape Town, for VDRL and Kolmer tests. When a case of endemic syphilis was seen, serum tests for syphilis were done on the patient as well as on all people living in the same house. Tests were also done on all other cases of syphilis seen and on all pregnant women.

Seropositivity of the Non-White Population

The total number of patients admitted during the given period was 620. The serological tests of 42 of these are not known (blood not taken in 23, blood haemolysed in 11, blood lost in transit in 7, test-tube broken in 1).

Of the 578 of whom the results are known, both VDRL and Kolmer tests were positive in 74 cases. In order to exclude false biological positive reactions, 13 of these were eliminated because their VDRL was positive in a dilution of less than 1:8.[27] This leaves 61 seropositives out of 578, or 10·6%.

The figures for Coloureds and Bantu separately are given in Table I.

*Date received: 18 July 1968.
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‡The Karoo is a semi-desert, stretching from the coastal mountain ridges in the south to the Orange River in the north and from Port Elizabeth in the east to the West Coast. The average annual rainfall varies between 125 and 375 mm.

TABLE I. SERUM TESTS FOR SYPHILIS

Race	*Admissions*	*Seropositives*
Coloured	436	50 (11·4%)
Bantu	142	11 (7·7%)

The figures for the different age-groups are set out in Table II.

The Incidence of Endemic Syphilis

Eighteen cases with typical secondary lesions and positive serum tests were seen (Table III).

Only a single case with stigmata of congenital syphilis was seen. This was a Coloured woman, aged 35 years, with interstitial keratitis and positive serum test.

Three cases with primary chancres were seen (all adults) and 2 cases with signs of secondary syphilis and strongly positive tests were encountered. One had condylomata lata of the vulva, the other a generalized pustular rash.

Seven cases of tertiary syphilis were seen. Two had syphilitic aortitis, 4 had gummata of the nasopharyngeal region, one had a gumma of the face.

Serum tests were done on all antenatal cases. Out of a total of 118, 15 (12·7%) were positive.

DISCUSSION

From this survey it is clear that two varieties of treponematoses coexist in this particular area. Cases of both venereal syphilis and non-venereal endemic syphilis were encountered.

The main features of the endemic non-venereal variety of the disease are identical with those found in Bechuanaland,[17] Southern Rhodesia,[29] Syria and Iraq[10] and Yugoslavia.[4]

The seropositivity rate of the non-White population is strikingly high, namely 10·6%. In Bechuanaland the incidence was 37%, in Southern Rhodesia 13·2% and in Yugoslavia 8·1%.

The family basis of the disease is very clearly shown by this survey. The 2 patients in whose families no other members had either external signs or positive serum tests lived on the same farm and were both known to have had contact with other cases of endemic syphilis not included in this survey.

The rarity of congenital syphilis is in accordance with the other surveys. Grin's[4] explanation is that because the infection occurs in early childhood, the women are in a state of immune balance by the age of procreation and there is a greatly reduced probability of the infected mothers giving birth to syphilitic children.

Primary lesions are seldom seen. With the recurrent inoculation by small amounts of treponemata the usual pathological tissue reaction does not take place.[4] A generalized infection however still results, leading to the appearance of secondary lesions such as split papules, mucous patches and condylomata lata; rashes, especially on the thighs and in the axillae; sore throat and laryngitis; and glands, especially the inguinal, may be enlarged.

The three cases of primary chancres seen were no doubt of the venereal variety.

The most common secondary lesions seen were mucous patches of the tongue, fauces, inner aspects of the lip or cheeks and condylomata lata of the anus and genitals.

If untreated, the secondary stage may last for 6 - 9 months. This is because natural immunity is slow to develop in treponemal infection. Some cases may relapse and secondary lesions may recur.

Most cases become latent, as was also shown in this survey. Except for a history of secondary lesions or a positive serum test or both, there is no indication of the disease until tertiary lesions manifest themselves.

TABLE II. SEROPOSITIVITY IN THE DIFFERENT AGE-GROUPS

Age-groups:	*0 - 10 years*		*11 - 20 years*		*21 - 30 years*		*31 - 40 years*		*41 - 50 years*		*51 - 60 years*		*60 + years*	
Race:	*Coloured*	*Bantu*	*Coloured*	*Bantu*	*Coloured*	*Bantu*	*Coloured*	*Bantu*	*Coloured*	*Bantu*	*Coloured*	*Bantu*	*Coloured*	*Bantu*
Admissions	208	67	57	13	70	21	39	18	25	10	15	5	22	8
Seropositives	13	2	17	1	7	1	8	4	0	1	4	1	1	1
Percentage	6·5%	3%	30%	7·7%	10%	5·0%	20%	22%	—	10%	27%	20%	5%	12·5%
	5·5%		26%		8·8%		21·1%		2·9%		25%		7%	

TABLE III. CASES OF ENDEMIC SYPHILIS

Age	*Sex*	*Race*	*Signs*	*VDRL*	*Kolmer*	*Parents with + ve serum test*	*Siblings with + ve serum test but without lesions*	*Remarks*
3 yrs	Male	Coloured	Split papules	1:128	64	Mother		
17 mths	Male	Coloured	Mucous patches	1:16	64	Mother		
6 yrs	Female	Coloured	Mucous patches	1:128	64		1	
4 yrs	Female	Bantu	Mucous patches	1:128	64			In contact with known cases of endemic syphilis
4 yrs	Male	Coloured	Mucous patches	1:128	64			
2 yrs	Female	Coloured	Mucous patches. Condylomata lata	1:128	64		2	
3 yrs	Female	Coloured	Condylomata lata. Pustular eruption on thighs	1:128	64		1	
2 yrs	Female	Coloured	Condylomata lata. Mucous patches. Pustular rash on thighs	+ ve		Mother		Siblings
5 yrs	Male	Coloured	Condylomata lata. Mucous patches. Pustular rash on thighs	1:128	64			
7 yrs	Female	Coloured	Mucous patches	1:64	64			
7 yrs	Female	Coloured	Mucous patches	1:128	64	Father	3	Siblings
5 yrs	Male	Coloured	Mucous patches. Split papules	1:64	64			
8 yrs	Female	Bantu	Mucous patches. Condylomata lata	1:128	64			Siblings
4 yrs	Female	Bantu	Laryngitis	1:128	64			
1 yr	Female	Coloured	Mucous patches. Condylomata lata. Circinate rash	1:64	64	Mother	1	Siblings
12 yrs	Male	Coloured	Papular rash	1:128	64			
9 yrs	Male	Coloured	Split papules. Mucous patches. Condylomata lata. Circinate and nummular rash	1:128	64	Father		
3 yrs	Male	Bantu	Mucous patches and nummular rash	1:64	64	Father and mother		

As regards the late lesions, there is some difference of opinion as to whether cardiovascular and central nervous system involvement actually occur in endemic syphilis. The consensus of opinion is, however, that if it does occur, it is very rare. In the present survey 2 cases of syphilitic aortitis were seen; but since venereal syphilis also occurred, the possibility that the late lesions followed on this variety cannot be excluded.

Although the history of syphilis in South Africa has been recorded and the literature on this subject reviewed by several authors,[18,21,22,24] very little is really known about the introduction and spread of syphilis among the non-White races.

Whatever the position might have been in the early days of South Africa, the fact is that syphilis was endemic among these races after 1800. McArthur and Thornton,[16] as early as 1911, emphasized that the disease was transmitted from patient to patient by direct or indirect non-sexual contact and that it occurred mainly in childhood.

Several serological surveys done in South Africa since 1920 have shown a high seropositivity rate of up to 47·8% in the Bantu.[1,14,19,20,25]

Subsequently the idea apparently arose that endemic syphilis had been eradicated. Murray stated that the place of endemic syphilis in the South African community was being taken by the classical venereal form of the disease. In Marshall's book[15] the following statement is made: 'South Africa had endemic syphilis in the past, now it has become too civilized for all but occasional tiny outbreaks'. Sieff is of the same opinion.[23]

In support to this point of view is the fact that over a period of more than 20 years only 3 reports of localized outbreaks of endemic syphilis in South Africa have been published.[7,26,28] Hackett furnished interesting examples of yaws transmission among South African goldminers. Van Beukering described a focus of endemic non-venereal syphilis among manganese mineworkers at Postmasburg in the northern Cape Province. This outbreak also had yaws-like features. Mucous patches, for instance, were not seen.

The only report corresponding to the Richmond survey and those in the other countries mentioned previously was that of Taylor.[26] Over a period of 2 years he saw 20 children with clinical manifestations of endemic syphilis at Fort Hare. This was probably the first report on endemic syphilis among Coloured people.

In reporting this survey, however, I wish to raise the question whether the exact extent and significance of non-venereal endemic syphilis in South Africa is completely known. It is my contention that syphilis is still endemic in the whole of the Karoo and probably in the rural areas

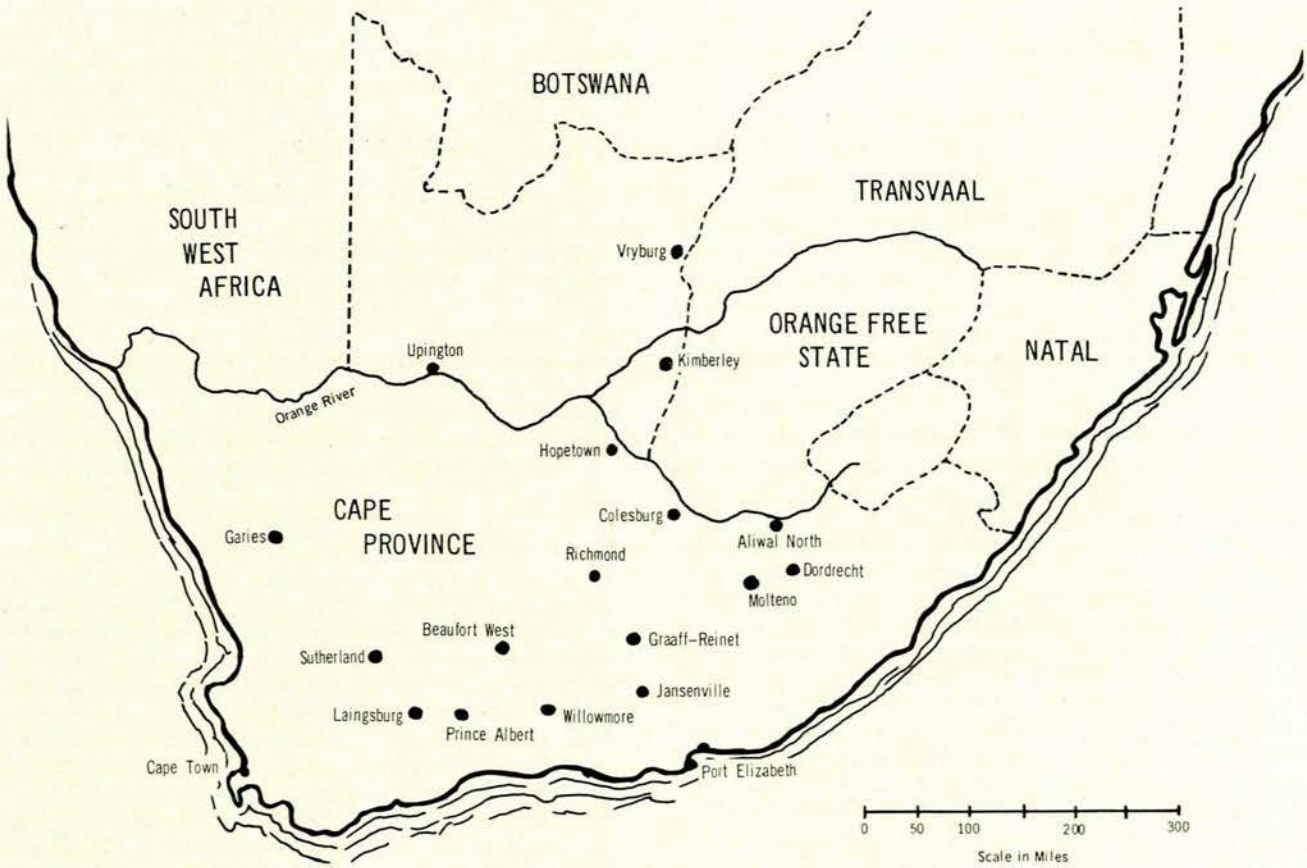

Fig. 1. Distribution of endemic syphilis.

of other parts of the Republic as well, but has not been recognized as such.

In order to determine whether cases of endemic syphilis presented in other parts of the Cape Province, questionnaires were sent to District Surgeons of various towns, chosen at random. They simply had to answer whether or not children with the typical oral and anogenital lesions were seen in their practices. Affirmative answers were received from the following towns: Aliwal North, Beaufort West, Burgersdorp, Colesberg, Dordrecht, Garies, Graaff-Reinet, Hopetown, Jansenville, Kimberley, Klipplaat, Laingsburg, Molteno, Prince Albert, Sutherland, Upington, Vryburg, Willowmore, Cradock and Prieska (Fig. 1). This clearly shows how widespread endemic syphilis actually is.

In conclusion, it is important that endemic syphilis should be treated in mass campaigns. Whole communities should be treated at one time.[6,13] Treatment of symptomless contacts and the latent cases is essential. Regions where endemic syphilis is prevalent must be considered as 'so many reservoirs of world infection, exactly as are foci of malaria or yellow fever'.[11]

SUMMARY

A survey of the incidence of syphilis in a Karoo town was made. It was found that venereal syphilis and endemic non-venereal syphilis coexist in this area. The endemic variety is identical with the endemic non-venereal syphilis found in other parts of the world.

It is contended that this is not an isolated focus of endemic non-venereal syphilis, but that this survey reflects the pattern of the whole of the Karoo. In support of this contention is the fact that cases of endemic syphilis are seen in towns over the whole of the Karoo.

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