Venereal syphilis in tropical Africa

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SUMMARY A steady decline in the incidence of positive results to the Kahn test is reported in Malawian patients during the period 1968-75. Other studies have shown that the incidence of early and late syphilis in sub-Saharan Africa has dropped considerably over the past few decades. The number of reported cases of early syphilis in certain urban areas, however, appears to be high. It is suggested that the downward trend in the incidence of syphilis in Africa is related to the increased and often indiscriminate use of penicillin.

Introduction

Annual statistics have shown an apparent increase in the incidence of infectious syphilis in most western countries since about 1955. This increase is sometimes referred to as being 'world-wide', thus indicating that the same trend has also been observed in Africa. Although reliable information on the prevalence of venereal syphilis in African countries is scarce, it is a common assumption that syphilis is highly prevalent in most developing countries (Harris, 1975). The apparent increase in the incidence of infectious syphilis in Africa is attributed to changing environmental patterns, principally accelerated urbanisation and general migration. Moreover, the successful eradication of yaws in the 1950s is said to have made whole populations susceptible to infection with *Treponema pallidum*.

During a three-year stay in Malawi, I noticed that the number of patients with early syphilis seen at the skin clinics in Blantyre was surprisingly low. Only 21 cases were registered over three years, whereas 1200-1600 new dermatological cases were seen each year. A study was, therefore, undertaken to analyse the serological tests for syphilis performed at the Central Laboratory, Queen Elizabeth Central Hospital in Blantyre, the results of which are presented here. In addition, the relevant literature is reviewed.

REVIEW OF THE LITERATURE

Reports from Africa on the incidence of early syphilis and positive results to serological tests over several consecutive years are scanty. Cowan

(1962), writing from Rhodesia, noticed that the number of patients with syphilis admitted to the Municipal Infectious Disease Hospital, Salisbury, showed a steady decline over the period 1950-60. In the same article a report of Willcox (1949) is quoted which indicates that the percentage of positive results to serological tests among antenatal clinic patients in Salisbury for the years 1945-49 was 14.1%, whereas in 1960-61 only 4% of mothers confined at the Harare Confinement Centre had positive Wassermann reactions. The same trend was noticed in South Africa; although during the years between the two world wars routine lipoidal tests on unselected Bantu patients showed positive results in 30-50% of cases this figure dropped to 7.4% in the late 1950s (Trowell, 1960).

In East Africa several authors had analogous findings. Beecher (1960) analysed the inpatient statistics of Kiambu Hospital, Kenya, from 1939-58. Whereas the number of cases of early syphilis ranged from 1.5 to 10.9 per 1000 admissions during the first half of the period under review, none was recorded in 1958. Reports from Kampala, Uganda, also show that the number of positive cases, using comparable test procedures, decreased considerably between 1966 and 1970 (Foster and Kerchan, 1966; Massawe, 1970). In West Africa Bâ *et al* (1965) studied the epidemiological aspects of syphilis serology of outpatients in Dakar, Senegal, over the period 1956-64; the percentage of positive results showed a steady decline. These observations agree with recent reports from other African countries, indicating a low incidence of positive serological results in patients at prenatal consultations (Osoba and Onifade, 1973; Meheus *et al*, 1975).

In contrast, a very high incidence of syphilis has been reported from a few, predominantly urban, areas. In Kampala venereal diseases, in-

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cluding syphilis, pose a serious health problem (Kibukamusoke, 1965; Lomholt, 1976). Schaller (1962), reporting from Addis Ababa, Ethiopia, found that 24% of patients with skin conditions suffered from syphilis. Data from Johannesburg and other South African towns also show a high incidence of infection. Dogliotti (1971) found that 17% of Bantu patients with skin conditions attending Baragwanath Hospital, Johannesburg, had early syphilis.

Cardiovascular syphilis

Early African reports indicate that syphilitic aortitis was the most common form of late syphilis and the most common cause of sudden death in Africans (Williams, 1938; Davies, 1947). During the last two decades, however, a progressive decline in the incidence of cardiovascular syphilis has been reported by several authors. This downward trend is most clearly illustrated in a series of publications from Uganda (Table 1).

Table 1 *Incidence of syphilis in patients with cardiovascular diseases at Mulago Hospital, Kampala, Uganda*

Author	Year	Period of study	Incidence of syphilis (%)
Williams	1938	1935-36	56.4
Williams <i>et al</i>	1952	1950-51	20.2
Shaper and Shaper	1958	1957	13.6
D'Arbela <i>et al</i>	1966	1962-63	6.2
Patel and Lwanga	1971	1966-68	4.5

Neurosyphilis

Edington and Gilles (1976) emphasised that neurosyphilis was still frequently found in many parts of the African continent. Analysis of the literature fails to support this. Castets (1963) concluded from the paucity of cases of neurosyphilis among his patients (1.3% of neuropsychiatric cases) that the incidence in Senegal was comparable with that in France at the time. Other reports from the same country clearly show a downward trend in the incidence of neurosyphilis between 1958 and 1971 (Collomb *et al*, 1965; Héraut *et al*, 1971). Among 273 neurological admissions to University Hospital, Lusaka, Zambia, no case of neurosyphilis was observed (Chuke *et al*, 1974). Similarly there is considerable evidence that in Uganda the incidence of neurosyphilis has fallen noticeably during the past 30 years (Table 2). James (1975), while studying cerebrovascular disease in Uganda, emphasised that cases of neurosyphilis (a common necropsy finding in earlier series) are now minimal.

Table 2 *Incidence of syphilis in patients with neuropsychiatric disorders at Mulago Hospital, Kampala, Uganda*

Author	Year	Period of study	Incidence of syphilis (%)
Muwazi and Trowell	1944	1940-42	51.0
Hutton	1956	1947-52	21.9
Shaper and Shaper	1958	1957	8.0
Billinghurst	1970	1966-68	4.3

Congenital syphilis

The scarcity of reliable information on the prevalence of congenital syphilis in sub-Saharan Africa prevents trends being recognised. Congenital syphilis still occurs frequently in many parts of Africa. This fact becomes apparent if we compare recent African series with health reports from western countries, where congenital syphilis is disappearing. In the Netherlands, with a population of 14 million, only four cases of congenital syphilis were reported in 1976. In Kampala, Bwibo (1971) observed 21 cases during a three-year period in paediatric practice, and Lomholt (1976) saw 40 cases in one year at the venereal diseases clinic at the same hospital. A high incidence has also been recorded by Freiman and Super (1966) from Johannesburg.

Materials and methods

Data from the Central Laboratory, Queen Elizabeth Central Hospital, during the period 1968-75 have been analysed. This laboratory serves the city of Blantyre-Limbe, the main industrial area of the country. Since in many district hospitals in Malawi no serological tests for syphilis antibodies can be performed, these are also performed in Blantyre. Most tests in Malawi are performed on clinical indication; the only screening that is done is of blood donors.

The Kahn test was the only test which could be performed during the period under study. Consequently, the results could not be checked against a more specific test. The serological reactivity was read as 1+, 2+, 3+, or 4+. All 1+ results were excluded because many may have been non-specific. All tests were read by the same laboratory assistant. The selection criteria for the patients tested probably did not vary throughout the study.

In order to obtain a more reliable indication of the incidence of seropositive results among the Malawian population, the laboratory data of the Mlambe Hospital, near Blantyre, were also analysed during the period 1972-75. At this hospital routine screening of all antenatal patients and blood donors

is carried out. The methods are entirely comparable with those at Queen Elizabeth Central Hospital, and the reagents used are common to both laboratories.

Results

The Figure and Table 3 show the percentage of positive Kahn tests at these two hospitals. The reduction in the figures from Queen Elizabeth Central Hospital is highly significant ($\chi^2 = 1338.4$; $P < 0.001$). The percentage obtained at Mlambe Hospital represents the routine screening of blood donors and antenatal patients. The downward trend at Mlambe is also statistically significant ($\chi^2 = 16.6$; $0.002 > P > 0.001$).

Fig. Percentages of positive Kahn tests performed at Queen Elizabeth Central Hospital from 1968 to 1975 and at Mlambe Hospital from 1972 to 1975 Malawi, Central Africa

Table 3 Total number of tests performed and number with positive results at Queen Elizabeth Central Hospital (1968-75) and Mlambe Hospital (1972-75), Malawi

Year	Queen Elizabeth Central Hospital		Mlambe Hospital	
	Total no. of tests	No. with positive results	Total no. of tests	No. with positive results
1968	20 486	3412	—	—
1969	17 633	2205	—	—
1970	18 901	2432	—	—
1971	18 922	2153	—	—
1972	20 529	2274	3162	142
1973	18 370	1443	3665	122
1974	16 674	1587	3562	117
1975	19 245	1300	3315	89
Total	150 760	—	13 704	—

Discussion

In most developing countries all forms of syphilis are more common than in affluent countries. The apparent resurgence in the prevalence of infectious syphilis in western countries during the past two decades has not occurred in tropical Africa. Our results show a downward trend in the incidence of seroreactivity in the Malawian population from 1968 to 1975. These findings agree with reports from various African countries during the post-war period.

In my opinion this decrease in the incidence of syphilis is genuine. However, few studies on venereal diseases in tropical Africa are uniform in the selection of patients and in the methods used. Numerous factors affect the results, thus making comparison with other series impossible. The most important of these factors are discussed below.

CLINICAL ASPECTS

In Malawi only two venereal diseases appear to be recognised—gonorrhoea and syphilis. The situation in other African countries is probably the same. Health services are mostly run by medical assistants. They have a fundamental, though limited, medical knowledge, and the enormous workload as well as inadequate laboratory facilities make a well-considered differential diagnosis difficult. Any purulent discharge from the penis is likely to be diagnosed as gonorrhoea. Most other conditions in the genital region are often erroneously diagnosed as syphilis, and this includes chancroid and herpes genitalis. Willcox (1958) clearly illustrated that the ratio of chancroid to primary syphilis increases whenever there is a properly equipped venereal diseases clinic in an urban area.

OFFICIAL GOVERNMENT REPORTS AND WHO STATISTICS

Ministry of Health and WHO reports indicate falling rates for venereal syphilis in African communities. Government reports, however, reflect the medical standards in these countries with all their limitations: insufficient professional training; poor diagnostic facilities; inadequate health education; and non-existent control measures. The uncertain value of official statistics from African communities is clearly illustrated when we compare the incidence of syphilis in Tanzania and Malawi. According to the WHO Statistics Report of 1970 (WHO, 1974) the number of notified cases of early syphilis for that year was 88 in Tanzania (population 13 million) and 6300 in Malawi (population 4.5 million).

YAWS

Most countries in Africa had foci of yaws infection before the eradication programmes commenced. At the moment yaws has been nearly eradicated in most areas. Because of the cross-immunity with venereal syphilis it was expected that large population groups would become susceptible to *T. pallidum*. So far, at least in the African continent, there is no conclusive evidence that the incidence of venereal syphilis has increased recently because of this altered susceptibility. Osoba and Olurin (1975) suggested that the mass treatment campaigns for yaws carried out in 1954 are partly responsible for the increasing incidence of infectious syphilis in southern Nigerians. On the other hand, Meheus *et al* (1975) concluded that syphilis was not (yet) common in Rwanda, although yaws was hyperendemic there before the successful eradication programme of 1956–58.

SYPHILIS SEROLOGY AND BIOLOGICAL FALSE-POSITIVE (BFP) REACTIONS

Various non-specific antitreponemal tests have been used by many workers in Africa. Specific procedures are in very limited use in developing countries. Foster and Kerchan (1966) commented on the lack of specificity of the Wassermann reaction compared with the Reiter protein complement-fixation test. Mann *et al* (1966) found that more than 50% of Venereal Disease Research Laboratory (VDRL) slide tests gave biological false-positive (BFP) results when the TPI test was used to confirm the results. Further evidence of substantial differences in sensitivity of various tests has been given by Massawe (1970) and by Ongom *et al* (1976).

Non-specific tests such as the Kahn give BFP reactions, and many disorders cause these reactions (Guthe, 1949; Scotti *et al*, 1970). Genetic, and hence racial, factors may also affect these reactions (Harvey and Shulman, 1966; Kostant, 1972). In Malawi, apart from a possible reduction in the incidence of leprosy, other conditions producing BFP reactions probably did not change in prevalence during the period of the study. It seems unlikely, therefore, that an alteration in the proportion of BFP reactions affected the decline in positive Kahn reactions reported here.

URBANISATION AND POPULATION MOBILITY

A high incidence of infectious syphilis has been found in several urban areas such as Addis Ababa (Schaller, 1962), Johannesburg (Dogliotti, 1971), and Kampala (Lomholt, 1976). Urbanisation has attracted thousands of young men to the big cities.

They represent the most sexually active members of the population, and because of their new social and cultural environment they often have frequent changes of sexual partners.

Conclusions

The findings in the present study indicate that there has been a continuing downward trend in the incidence of venereal syphilis in tropical Africa over the past three decades. In western countries, apart from the recent increase in early syphilis, there has been a general decrease in the incidence of syphilis since the beginning of the century (Bohnenblust, 1967; Felton, 1973). I expect that the incidence in Africa will follow the same trend. The recent exacerbation of the disease in the developed countries is certainly not seen in Africa. The main factor contributing to this decline appears to be the increased availability of penicillin, for in rural health centres penicillin is often the only antibiotic available. It is indiscriminately prescribed for a wide variety of diseases, and many cases of subclinical infectious syphilis are inadvertently and fortuitously cured in this way.

With the improvement in socioeconomic conditions in the communities under review, together with an improvement in medical services, I expect the observed trend to continue.

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