The CENTRAL AFRICAN JOURNAL OF MEDICINE

Vol. 4. No. 10. OCTOBER, 1958.

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PUBLISHED MONTHLY, ANNUAL SUBSCRIPTION £2 2s. 0d.
Registered at the General Post Office as a Newspaper.

Venereal Syphilis and other Venereal Infections in Non-Venereal Treponematoses Areas in Africa*

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The management of gonorrhoea, non-gonococcal urethritis, lymphogranuloma venereum and granuloma inguinale, apart from case-finding in the female, offers no fundamental difficulties in Africa as compared with other areas. The following, however, are considered to be major difficulties in the management of venereal syphilis:—

(1) The high prevalence of soft sore in Africa.

(2) Retention of the foreskin by many tribes and the tendency to secondary infection of genital sores.

(3) Confusion of the dark-field by fuso-spirochaetosis and "non-specific" spirochaetes.

(4) Confusion of the serum test findings by technical and biological false positive reactions, and by true positives owing to the presence of other treponematoses in the same or adjacent areas.

(5) Difficulties, often amounting to impossibility, of obtaining proper follow-up of incompletely diagnosed cases.

(6) Inadequacy of case-finding of female sources of infection. This applies to all of the venereal diseases

VENEREAL DISEASES ENCOUNTERED IN A TREPONEMATOSIS AREA

The area chosen for consideration is Ghana. Figures are given in Table I of patients treated by the author in a large military clinic at Accra during 1944. This clinic may be considered to be representative of a venereal diseases clinic in a yaws area; indeed, the first cases of yaws were treated with penicillin less than a mile from the clinic (Findlay *et al.*, 1944).

It is noted that, as elsewhere, gonorrhoea was the commonest venereal disease. There was proportionately somewhat less soft sore and lymphogranuloma venereum in Europeans than in Africans, and more non-gonococcal urethritis —greater notice probably being taken of the latter by the white population under review. The syphilis cases were practically all early cases. Yaws does not feature in the tables, as symptomatic cases were not necessarily seen in the V.D. clinic. Many of the patients, however, had latent yaws. Also there was a high incidence of soft sore in the African as compared with syphilis—a fact which is noted in most urban African areas where there are laboratory facilities to reinforce diagnosis.

The latter fact is brought out in Table II, which gives the national figures for the Gold Coast in 1954 (Personal communication (1955), Ministry of Health, Gold Coast).

The high prevalence of gonorrhoea in relation to other venereal diseases is well shown in the figures for the port of Takoradi. This is a general experience in this area. In Sierra Leone in 1943 there were 11,132 cases of gonorrhoea treated compared with 585 cases of all forms of syphilis, 1,406 of other venereal diseases and 15,627 cases of yaws. Gonorrhoea was thus responsible for 85 per cent. of all venereal diseases treated (Sierra Leone Report of Medical Health Services, 1955).

CHANCROID IN AFRICA

Owing to variations in standards of diagnosis there are few true figures of the numbers of cases of chancroid in Africa. From collected official sources relating to the years 1936/1952 (Willcox, 1956), the ratio of cases of syphilis (all forms) to one of chancroid ranged from 0.3 in the military V.D. clinic at Accra in the Gold Coast (0.5 at the Takoradi clinic, Gold Coast), 0.6 in the African V.D. clinic at Salisbury, Southern Rhodesia; 0.8 at the Military Hospital, Ibadan, Nigeria; 1.7 at the African Hospital, Mulago, Uganda; 3.3 in the V.D. clinic at Dar-es-Salaam, Tanganyika; 5.3 in government clinics and dispensaries in French Somaliland; 9.1 in government hospitals and dispensaries in Somaliland; 9.9 in the V.D. clinic at Nairobi, Kenya; 20.1 in government hospitals and dispensaries in French Dahomey; 28.9 at like institutions in the French Cameroons; 31.6 in Bechuanaland; 41.4 in the Belgian Congo; 73.7 in Northern Rhodesia; 229.1 in Basutoland to 593.0 in the government hospitals in Swaziland.

The ratio of chancroid to primary syphilis in a number of African territories is shown in Table III.

From an examination of these figures it is apparent that whenever there is a properly equipped venereal diseases clinic in an urban

* Paper prepared for the World Health Organisation Second International Yaws Symposium, Enugu, Nigeria, October, 1955.

area, chancroid is reported in large numbers. In many other places all sores on the genitals tend to be labelled as syphilis.

Certainly the ratio of chancroid to syphilis in areas where there are V.D. clinics is far greater than that which was encountered in European countries when syphilis was prevalent. As the incidence of early syphilis declined, the ratio with that of chancroid fell also. In 1946, for example, in the clinics of England and Wales the number of cases of early syphilis in males to one of chancroid was 10.8. By 1949 it was 8.1 and in 1953 the figure had fallen to 2.2 (Report, Ministry of Health, 1953).

Another method of determining the prevalence of chancroid in an area is by skin test, using an antigen consisting of a vaccine of *H. ducreyi.* A positive result may be found even many years after infection. For this reason the test has only a limited value in the diagnosis of chancroid in an individual case, but it is a useful guide as to the prevalence of the disease in a population group. The results of 1,022 such tests performed in Africa are shown in Table IV (Willcox, 1951).

It is shown by the figures that chancroid is generally a disease of the towns. Although it is a major problem in the management of venereal syphilis in areas in which it is present, it is unlikely to confuse the diagnosis of yaws or endemic syphilis in the rural areas.

(*Note.*—In recent times there have been attempts, notably based on experience in the Far East, to suggest that some of the cases thought in the past to be soft sore have not been due to *H. ducreyi.* A microaerophilic streptococcus has been incriminated (Leibovitz, 1954). Such developments, even should they be substantiated, in no way interfere with the arguments put forward in this paper.)

Routine of Choice for the Management of Genital Sore

When confronted with a genital sore in developed countries the routine is to perform dark-field tests if necessary daily for three days, during which time no antibiotics are given and only normal saline applied to the sore. A serum test for syphilis is made at once and thereafter monthly for three months. Although the isolation of *H. ducreyi* from the sore, or a positive skin test for chancroid, is helpful, these findings do not exclude syphilis and the prescribed routine has still to be followed. For this reason routine tests for chancroid are frequently omitted. Clinical judgment plays no conclusive part in the diagnosis of venereal syphilis except in determining how intensive should be the routine described to obtain pathological confirmation.

The effects of applying such a regime in the African will be considered in detail. The data was obtained from Salisbury, Southern Rhodesia, during a venereal diseases survey of the African made during 1949 (Willcox, 1949). No yaws was present in this area. The only significant treponematosis was venereal syphilis, although an endemic form of syphilis (njovera) was found in certain remote rural areas of that country (Willcox, 1951).

Limitations of the Dark-Field Test Under African Conditions

The frequent absence of the circumcision ritual in many African tribes results in a phimosis when a genital sore is contracted. Consequently many such sores cannot be adequately inspected or proper tests taken from them. The mass use of the dorsal slit operation, even if desirable, is not feasible. Moreover the frequent secondary infection of sores with fuso-spirochaetosis or other "non-specific" spirochaetes increases enormously the difficulty of diagnosis by semi-skilled persons. Moreover secondary infection may result in suppurating buboes even in syphilitic cases, which further confuses clinical diagnosis.

The dark-field routine was applied to 229 cases of genital sore at Salisbury, Southern Rhodesia. The results are shown in Table V.

Throughout a positive result was obtained with approximately one dark-field test in eight. By patients, 12.2 per cent. were positive at the first test, 12.4 per cent. at the second test and 10 per cent. at the third test—a cumulative-positivity rate of 34.6, or approximately one patient in three.

It is interesting to contrast these results of the dark-field test in an African area with those on sore cases in London, where the incidence of early syphilis is steadily declining (Table VI).

It is noted in 1949 that the positivity rate per test was almost identical in London as in Salisbury, although in London there was no appreciable incidence of soft sore confusing the problem.

Exact figures are not available to show the numbers of dark-field tests done per case of syphilis diagnosed in the London clinic in question. However, they lay in the range of 4.1-6.9 dark-fields per case of syphilis diagnosed in 1949, 9.3-15.8 in 1953 and 13.2-19.0 in 1954-1955. In the African series of 1949 the figure was 8.1. Thus, on paper, the yield of positive results by dark-field in Africa, in spite of the problem of soft sore, is quite comparable with experiences elsewhere.

In many parts of Africa there is an insufficiency of trained persons to operate the dark-field, and reliance has perforce to be placed on clinical diagnosis alone. It is interesting to note in the series under consideration how the diagnosis was modified in the dark-field-positive cases from that made on first inspection (Table VII).

A total of 525 tests was thus required to change the diagnosis of 12 of 229 cases—a total of 43.7 tests per diagnosis changed. Of the whole series of 229 cases of genital sore, the dark-field resulted in a change of diagnosis approximately in only one case in 20.

LIMITATIONS OF SERUM TESTS FOR SYPHILIS IN AFRICA

In the series under review the standard Kahn, the Ide and the Wassermann (not with cardiolipin) tests were performed by the investigating unit. The latter test was also checked in the local laboratory. Of the 229 cases, 28 had only one test, 26 had two tests, 111 had three tests, 56 had four tests and eight had none. The results show considerable disagreement; the greater number of tests per case, the greater was the likelihood of discrepancy (Table VIII) —although obviously the situation could be clarified by taking a majority reading.

The variations in seropositivity by the different tests in dark-field positive and dark-field negative cases of genital sore are shown in Table IX.

These results show that 53.9 per cent. of the serum tests on dark-field positive cases were negative, indicating that in a soft sore area male patients frequently report with seronegative primary syphilis. Moreover, 27.4 per cent. of the tests on the dark-field negative cases—in an area where there was no confusing yaws—were seropositive.

Variations in positivity by diagnosis are given in Table X. Data here consists of a larger series of 256 patients attending the venereal diseases clinic at Salisbury, Southern Rhodesia, of whom 229 had genital sores.

The seropositivity rates have been expressed as a percentage in Table XI.

The complete results on these 256 cases in which multiple tests were performed are shown in Table XII.

From these results sensitivity and specificity rates have been calculated (Table XIII). No significant differences were found between dark-field positive and dark-field negative cases. The relatively low sensitivity of all tests, especially the Ide, and the variations in sensitivity between the Wassermann reactions in two laboratories are noted. The relatively low specificity of the Kahn test is also apparent.

In Table XIV the usefulness of serum tests for syphilis is considered under African conditions in improving upon purely clinical diagnosis.

As a result of serum tests for syphilis, only 10 of 93 persons (10.8 per cent.) originally considered to be non-syphilitic were diagnosed as suffering from syphilis.

The serum tests so far described, in the absence of other confusing treponematosis, indicate the problem of the false-positive reaction *en masse*. Many of the false-positive results are technical and the necessary reforms to ensure standardisation of reagents and methods are essential. Experiences in some parts of the world have indicated a marked fall in seropositivity when cardiolipin antigens have been used. Thus in the Tanta region of Egypt seropositivity rates of 10 per cent. were estimated in pre-cardiolipin times. When cardiolipin was employed in a survey covering over 12,000 people in 1951, seropositivity in different population groups ranged only from 1.3-5.4 per cent. (Guthe, 1955).

Many of the false-positive findings in Africa are biological in nature and are due to malaria, leprosy, trypanosomiasis, etc. A number of observers (e.g., Lapeyssonie, 1954) have reported satisfactory results in Africa using the VDRL slide test with cardiolipin. Not all serologists, however, are in agreement, and it has even been suggested (Price, 1954) that with the more sensitive cardiolipin antigens there is a greater liability to non-treponemal reactions. The mass use of the treponemal immobilisation test or agglutination tests have not so far been reported in Africa and cannot at present be considered.

These considerations, however, do not apply to true treponemal reactions resulting from yaws. Indeed, such reactions have been found to be confusing to the management of venereal syphilis in the United Kingdom thousands of miles from an active yaws area (Willcox, 1949; Laird, 1954). A comparison of the results of the Kahn tests in venereal diseases patients in Salisbury, Southern Rhodesia, and at Accra, Ghana (a yaws area), is made in Table XV.

The greater seropositivity rate in V.D. cases other than syphilis is shown. The interpretation of serum tests for syphilis in a population in which the effects of yaws may confuse serum tests for syphilis are summarised by a remark of Bettley (1945). Writing of African troops in East Africa, he stated that only a negative Kahn reaction was of any real value (Bettley, 1945). It is not likely either that any developments of the treponemal immobilisation or agglutination tests will assist in this matter in the immediate future.

DIFFICULTIES OF FOLLOW UP

The one fundamental difficulty in the management of cases of genital sore in Africa is that of persuading seronegative patients with healed sore to attend for follow up serological examination, which is so necessary in treated chancroid definitely to exclude syphilis. If it were not for this fact many of the problems arising from discrepant serum tests, etc., could be resolved.

Ideally such serum tests should be performed once a month for three months. In the series of 229 genital sores under review only 36 patients (15.7 per cent.) returned for the second test at the end of the first month and only eight (3.5 per cent.) after this time.

In the face of such a situation it is evident, from the practical standpoint, that one must

generally work on the assumption that the patient once clinically well will not return. If ancillary staff is limited there are activities other than the pursuit of defaulting patients, provided treatment is geared accordingly, which are more profitable.

Usefulness of Diagnostic Routine in Africans

What then, in practice, is the value of the diagnostic regime in Africa as an improvement upon ordinary clinical diagnosis?

Of 229 cases of genital sore there is information on the "before and after" diagnoses of 211. The diagnosis was changed from other than syphilis to syphilis in 12 instances as a result of 525 dark-field tests, and in 10 instances as a result of 636 serum tests. A change was made to syphilis, therefore, in 22 of 211 cases, or in 10.4 per cent. Clinical diagnosis was thus 89.6 per cent. efficient as regards syphilis. The diagnosis was changed from syphilis to other conditions in 20 of the 211 cases—which gives an efficiency rate of 90.5 per cent. the other way.

Table I

Male (Military) V.D. Cases Treated at Accra, Ghana, in 1944

Disease	*European*		*African*	
	Number	*Per cent.*	*Number*	*Per cent.*
Syphilis	18	5.3	132	4.2
Soft sore	32	9.5	574	18.2
Gonorrhoea	162	47.9	1,597	50.7
Non-gonococcal urethritis	59	17.5	159	5.0
Lymphogranuloma venereum	25	7.4	432	13.7
Others	42	12.4	258	8.2
TOTALS	338	100	3,152	100

Table II

1954 Figures for the Gold Coast

	Government Hospitals, Children's Clinics, Health Centres, Rural Dispensaries, Medical Field Teams, Prisons		*Takoradi Harbour V.D. Clinic*	
	Male	*Female*	*Male*	*Female*
Early syphilis	126	34		
Congenital syphilis	93	67		
Tabes dorsalis	3	1		
G.P.I.	12	—		
All other syphilis	870	615		
TOTAL SYPHILIS	1,104	717	18	4
Soft sore	—	—	42	1
Gonorrhoea	7,099	2,306	4,561 (plus 14 children)	14
Lymphogranuloma venereum	191	23	55	—
Granuloma inguiniale	248	43	—	—
Other V.D.	1,298	478	Figures not stated	
YAWS	120,098 cases		215 cases	

Table III

Ratio of Chancroid to Primary Syphilis in a Number of African Territories

Territory	*Nature of Figures*	*Year*	*Primary Syphilis*	*Chancroid*	*Number of Cases of Primary Syphilis to One of Chancroid*
Uganda	African Hospital, Mulago	1936/37	163	384	0.4
Southern Rhodesia	V.D. Clinic, Salisbury	1949 (sample)	75	94	0.8
French Dahomey	Government Hospitals and Dispensaries	1950/51	1,027	1,221	0.9
French Somaliland	Government Hospitals and Dispensaries	1951/52	279	253	1.1
Bechuanaland	Government Hospitals and Dispensaries	1950	2,232	290	7.7
Basutoland	Government Hospitals and Dispensaries	1950/51	2,147	51	42.1
Swaziland	Government Hospitals and Dispensaries	1952	497	1	479.0

Table IV

Reactions to the Ito-Reenstierna Skin Test for Chancroid in Ghana and Southern Rhodesia

Region	*Group Tested*	*Number Tested*	*Number Positive*	*Per cent. Positive*
Gold Coast— Accra	Chancroid patients	10	9	90.0
Accra	Other venereal disease patients	22	10	45.5
Southern Rhodesia— Salisbury	Male chancroid patients	32	20	62.5
Salisbury	Male venereal disease patients	290	129	44.5
Bulawayo	Male venereal disease patients	66	12	18.2
Salisbury	Male African troops	168	41	24.4
Rural areas	Male clinic patients	61	4	6.6
Salisbury	Prostitutes	90	35	38.9
Rural areas	Female clinic patients	150	7	4.7
Salisbury	Children, urban clinics	14	5	35.7
Rural areas	Children, rural clinics	119	6	5.0
	TOTALS	1,022	278	27.2

Table V

Results of 525 Dark-Field Tests on 229 Male Cases of Genital Sore in Africans

(Salisbury, Southern Rhodesia)

Number of Tests per Case	*Patients Tested*	*Positive*	*Cumulative; No Tests*	*Cumulative Positive*	*Per cent. of Tests Positive*
At first test	229	28	229	28	12.2
At second test	170	21	390	49	12.6
At third test	100	10	490	59	12.0
At fourth-sixth test	26	6	525	65	12.4
Total patients positive	229	65	525	65	28.4

Test done per case of syphilis diagnosed: 8.1.

Table VI

Results of Dark-Field Tests in London

Period	*Tests*	*Positive*	*Negative*	*Per cent. Positive*
June, 1954, to June, 1955	397	12	385	3.0
1954	316	24	292	7.6
1949	574	73	501	12.7
	1,287	109	1,178	8.5

Table VII

Influence of Dark-Field Test Results on First Clinical Diagnosis

	Preliminary Diagnosis	*Later Diagnosis*
Primary syphilis	40	49
Secondary syphilis	7	8
Mixed primary syphilis and soft sore	4	6
Soft sore	9	—
Balanitis	2	—
Phimosis	1	—
No data	2	2
	65	65

	Cases	*Tests*	*Diagnosis Changed*	*Per cent. Change*
Dark-field positive	65	125	12	18.5
Dark-field negative	164	400	—	—
TOTAL	229	525	12	5.2

Table VIII

Serum Tests in Sore Cases
(Salisbury, Southern Rhodesia)

		Dark-field Positive	*Dark-field Negative*	*Total Patients*	*Discrepant*	*Per cent. of Cases Discrepant*
Ibe test	Pos.	2	9	28	0	0
	Neg.	2	15			
Two tests	++	1	2	26	4	15.4
	+N	1	3			
	NN	11	8			
Three tests	NNN	13	43	111	33	29.7
	NN+	7	13			
	N++	6	7			
	+++	8	14			
Four tests	NNNN	1	22	56	21	37.5
	NNN+	2	12			
	NN++	1	4			
	N+++	1	1			
	++++	7	5			
No tests		2	6	8	—	—
TOTAL		65	164	229	58	25.3

Table IX

Seropositivity to Different Tests by Dark-Field
Salisbury, Southern Rhodesia.

	DARK-FIELD POSITIVE (63 cases tested)			DARK-FIELD NEGATIVE (157 cases tested)		
	Total	*Positive*	*Per cent. Positive*	*Total*	*Positive*	*Per cent. Positive*
Ide	40	13	32.5	81	14	17.3
Kahn	38	27	71.1	104	35	33.7
WR	59	22	37.3	134	41	30.6
Other WR	43	21	48.8	137	35	25.5
TOTAL	180	83	46.1	456	125	27.4

Table X

Variations in Seropositivity by Diagnosis and Test

(256 cases attending V.D. clinic, Salisbury, Southern Rhodesia)

Test	SOFT SORE		SYPHILIS		OTHERS		TOTAL	
	Number	*Positive*	*Number*	*Positive*	*Number*	*Positive*	*Number*	*Positive*
Ide	50	4	58	20	39	4	147	28
Kahn	64	18	55	33	45	11	164	62
WR	83	14	85	40	57	12	225	66
Other WR	71	12	70	31	52	15	193	58
TOTAL	268	48	268	124	193	42	729	214

Table XI

Per Cent. Seropositivity Rates

Salisbury, Southern Rhodesia

Diagnosis	*Ide*	*Kahn*	*WR*	*Other WR*	*Total*
Soft sore	8.0	28.1	16.9	16.9	17.9
Others	10.3	24.4	21.1	28.8	21.8
Syphilis	34.5	60.0	47.1	44.3	46.3
TOTAL	19.0	37.8	29.3	30.1	29.4

Table XII

Results of Multiple Serum Tests

(Salisbury, Southern Rhodesia)

	IDE		KAHN		WR		OTHER WR		Totals
	Positive	*Negative*	*Positive*	*Negative*	*Positive*	*Negative*	*Positive*	*Negative*	
Ide .... Pos.	—	—	14	2	29	1	16	0	62
Neg.	—	—	24	46	12	105	11	62	260
Kahn ..... Pos.	14	24	—	—	37	23	28	27	153
Neg.	2	46	—	—	17	82	8	80	235
WR .... Pos.	29	12	37	17	—	—	39	15	149
Neg.	1	105	23	82	—	—	9	101	321
Other WR ..... Pos.	16	11	28	8	39	9	—	—	111
Neg.	0	62	27	80	15	101	—	—	285
TOTALS	62	260	153	235	149	321	111	285	1,576

Table XIII

Sensitivity and Specificity

SENSITIVITY (Per cent tests positive of those known to be positive to other tests)				SPECIFICITY (Per cent. agreement with other tests)		
Test	*Total Other Tests Positive*	*Positive*	*Per cent.*	*Total Other Tests*	*Agree*	*Per cent.*
Ide	106	59	55.7	322	272	85.4
Kahn	106	79	74.5	388	287	74.0
WR	138	105	76.1	470	383	81.5
Other WR	125	83	66.4	396	326	82.3

Table XIV

Influence of Serum Tests on Clinical Diagnosis

(Dark-field negative cases of genital sore, Salisbury, Southern Rhodesia)

Diagnosis	*Initial Clinical Diagnosis*	*Later Diagnosis*	*Changed from Syphilis*	*Changed to Syphilis*
Primary syphilis	45	34	18	—
Secondary syphilis	8	7	1	—
Mixed soft sore and primary syphilis	2	3	1	—
Soft sore	75	87	—	8
Lymphogranuloma venereum	6	5	—	—
Balanitis	3	2		
Paraphimosis	3	2	—	1
Warts	2	2	—	—
Others	4	6	—	1
Data incomplete*	16	16	—	—
TOTALS	164	164	20	10

* In these cases only one diagnosis was made, being syphilis in three, soft sore in eight, others in four and no data in one.

Table XV

Kahn Test Findings in African Venereal Disease Patients in a Yaws and a Non-Yaws Area

	YAWS AREA (Accra, Gold Coast)			NON-YAWS AREA (Salisbury, Southern Rhodesia)		
	Tested	*Reactive*	*Per cent. Reactive*	*Tested*	*Some Reaction*	*Per cent. Reactive*
Syphilis cases	45	26	57.8	55	33	60.0
Other V.D. cases	172	67	39.0	109	29	26.6

For many years in many parts of Africa a rough clinical diagnosis is all that has been found to be possible in the management of patients suffering from venereal diseases. Crudely, all cases of genital sore are in many areas called "syphilis," and all cases of urethral discharge are labelled "gonorrhoea." Prior to the penicillin era, when cases of syphilis were treated for long periods with toxic arsphenamines, often in hospital, there was considerable danger in giving such treatment unnecessarily for soft sore. Not only was there the risk of toxicity, but the treatment moreover was largely unsuccessful, involving not infrequently long spells of unnecessary hospitalisation.

To-day one is forced to consider whether it is worth while under conditions in which lack of follow-up prevents success to employ as a routine any pathological tests at all. It would appear, certainly where no V.D. clinics exist, reasonable to rely upon clinical diagnosis only. Indeed, if a treatment is used which is effective both in syphilis and chancroid, most of the difficulties are removed.

A Standard Treatment for All Cases of Genital Sore

Trials were undertaken in Salisbury, Southern Rhodesia, using single injections of 2.4 mega units of procaine penicillin with aluminium monostearate on 99 African patients with penile sores. All of these patients had up to three daily dark-field examinations and a serum test performed to exclude syphilis.

Nineteen patients were thought definitely to have soft sore, of which seven had fluctuant buboes. They were all fit for discharge from hospital in an average of 5.5 (longest 13) days, although the fluctuant buboes required aspiration. Only three were regarded as failures and required further treatment with sulphadiazine. The other 80, either on the grounds of positive dark-field or serum tests or on account of the presence of a typical adenitis, were considered to have syphilitic infections, although a mixed infection with soft sore was probable in a large number. Of these, only 12 were given additional treatment (oral sulphadiazine in eight and local calomel ointment in four).

Thus only 11 (11.1 per cent.) of the 99 Africans with penile sore treated with single injections of 2.4 mega units of procaine penicillin with aluminium monostearate required sulphadiazine over and above the penicillin.

It is considered, therefore, that a routine single injection treatment with PAM is reasonably effective for both chancre and chancroid, and sulphonamides may be reserved for those cases (which are usually soft sore) in which the sores fail to heal. Lymphogranuloma venereum (which has a small transitory sore) will only occasionally cause confusion, but even so will often respond to this regime. For the small residue of patients whose sores fail to heal, the diagnosis of granuloma inguinale will have seriously to be considered.

Treatment of Contacts

That the main reservoir of infection of most of the venereal diseases in Africa is the untreated woman is not in dispute. The males usually migrate to the towns and the young women follow as prostitutes. Prostitution in general, both habitual and occasional, is not looked upon as a grave social or moral misdemeanour.

It is obvious that in recent years developments towards simplicity of treatment has quite outstripped those leading to simplicity of diagnosis. As a first priority in the management of venereal syphilis in Africa with limited personnel, rather than attempting to patch up the at present inadequate diagnostic methods by following up cases, it is more profitable to concentrate on treating contacts. The word "contact" should be used in its widest sense as by Moses in Numbers 31, 17, in dealing with the plague of Moab. He ordered the death of all women "that hath known man by lying with him." In these more enlightened times perhaps we should rely on penicillin! The campaigns against the non-venereal treponematoses fail unless contacts are assiduously sought and treated (Guthe and Willcox, 1954). If necessary, whole population groups are regarded as contacts. A similar approach is necessary for the management of venereal syphilis in areas in which its incidence is high.

General Approach

It would seem logical, therefore, to employ the broad concepts employed in the WHO-mass campaigns against the rural treponematoses in any broad attack against venereal syphilis.

The central clinic of the largest town in the area under consideration should resemble the pilot area of the mass campaign. Here every effort should be made to diagnose patients properly; laboratory tests of all forms—many on a research basis—should be carried out, a reference laboratory should be established and steps taken to standardise serological tests and techniques in the area. Every effort should be

made to follow up treated patients and those in whom the diagnosis is in doubt, so that the results of both diagnosis and treatment can be properly assessed. Here too medical, auxiliary and laboratory personnel—for use in other model clinics to be established later—should be trained.

Elsewhere in the area, however, diagnosis may rest on clinical grounds only, and all cases of genital sore given a single injection of 2.4 mega units of procaine penicillin with aluminium monostearate. Sulphadiazine may be administered to those patients whose sores fail to heal. A second injection may be given a week later to patients with secondary syphilis. Follow-up, although desirable, is not essential.

Every effort should be made to secure the contacts. Any female brought in by the patient should be examined if possible, but certainly treated. The most liberal interpretation of the word "contact" should be made. Known prostitutes should be encouraged to make regular monthly visits and repository penicillins should be considered for these persons. African social workers, who would appreciate the comings and goings and status of the women concerned, should be trained as contact tracers.

Epidemiologically it is the women who are the key to the success or otherwise of the control of venereal syphilis in Africa. Mobility is an essential quality of the mass treatment campaign against the non-venereal treponematoses. A similar mobility is required in the management of venereal syphilis of the towns. It is in the environs of the treatment centre rather than in the clinic itself that the essential work has to be done.

Summary and Conclusions

(1) While the non-venereal treponematoses are found in the rural areas, the venereal diseases are concentrated in the towns.

(2) The major problems in the management of venereal diseases in Africa are concerned with the management of venereal syphilis.

(3) Figures have been presented to show the high prevalence of chancroid in Africa in areas where the incidence of venereal syphilis is high. This naturally leads to problems of diagnosis.

(4) Diagnosis by dark-field is rendered difficult by the retention of the foreskin in many areas, by secondary infection of genital sores with non-specific spirochaetes, and by the absence of fully trained personnel to distinguish them.

(5) Serum tests are likewise confused by technical and biological false-positive reactions and by positive reactions due to endemic treponematoses. In addition, the difficulty of persuading patients with healed sores, and those with undecided serum reactions, to attend for follow-up examination reduces materially the value of these tests.

(6) The use of 525 dark-field examinations and 636 serum tests for syphilis on 229 patients with genital sore in Salisbury, Southern Rhodesia, have been considered in detail. The final diagnosis of these cases following the performance of these tests has been compared with the initial diagnosis before the tests were made. As a result of these tests the diagnoses were changed from other conditions to syphilis in only 10.4 per cent., and the other way round in 9.5 per cent. This rate of efficiency is probably equal to that of the tests concerned.

(7) Although it is considered that serum tests should be standardised and modern antigens employed, the lack of follow-up still limits the value of their interpretation. It is thus felt in a treatment campaign at the present time that it is better to omit all tests on a mass basis and to give a treatment which is reasonably effective in both soft sore and syphilis.

(8) The use of single injections of 2.4 mega units of procaine penicillin with aluminium monostearate has been tried in 99 Africans with genital sore. This form of treatment is known to be effective in primary syphilis, and it proved also to be reasonably effective in cases of soft sore. Its use as a routine is therefore recommended. Sulphonamides can be employed for those cases in which the sores fail to heal.

(9) It is suggested that the concepts of the mass treatment campaigns against the non-venereal treponematoses be applied to the management of venereal syphilis. The central large clinic should be the "pilot area" in which diagnosis and treatment are conducted at the best possible level. Here training of medical and auxiliary personnel can be undertaken. In the other areas, however, mass treatment with penicillin should be given to all patients with genital sores and to their contacts, irrespective of the presence or absence of clinical signs of disease. Developments towards simplicity of treatment have quite outstripped any parallel developments in diagnosis. Until and unless tests can be devised to indicate the presence of the treponeme from the moment that it enters the body, it is wrong that the potentialities of

the simplified treatments which are available to-day should not be fully employed.

(10) Efforts to secure the female contacts for treatment should be intensified. The word "contact" should be used in its widest sense to include all females "at risk."

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