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CHANCROID IN TROPICAL AFRICA : SOUTHERN RHODESIA AND THE GOLD COAST

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Chancroid is now an exceedingly rare disease in countries that are socially and economically advanced. In Denmark, for example, during 1948, there were only 34 reported cases, an incidence-rate of 0.1 per 10,000 people.² During the same year, only 706 males and 21 females in the United Kingdom were found to have chancroidal infections. Durel³ recently stated that the disease had practically disappeared from continental France.

There are, however, many parts of the world where chancroid continues to be rife, and where the incidence of this disease is far greater than is commonly believed because facilities for definite diagnosis are lacking. Such is the case in the Gold Coast and in Southern Rhodesia, where chancroid constitutes a health problem of considerable magnitude.

Data relating to the high incidence of chancroid in these two African countries are herein presented and discussed in relation to the declining incidence of the disease in other parts of the world.

1. Declining Incidence of Chancroid in Europe

It is a remarkable fact that, although venereal-disease-control measures have been directed primarily against syphilis and gonorrhoea, the incidence of chancroid in Europe has declined from levels comparable to those encountered in Africa today to a point where the disease is now almost a medical curiosity. In view of the fact that before 1936 there was no really effective form of therapy, the decreasing incidence must be attributed to general socio-economic development, to improved standards of education and hygiene, and perhaps also to the practice of circumcision.

Moore⁶ has recently pointed out that the incidence of syphilis began to decline before the discovery of effective methods of therapy, and has suggested that general improvements in socio-economic conditions in Western civilization may have been an important factor. Kinsey and his co-workers⁵ have shown that among better educated classes there is far less likelihood of contracting a venereal disease than there is among groups of lower educational standards.

Chancroid, even more than syphilis, is a disease associated with personal ignorance and uncleanness and with substandard living conditions, and

hence the more readily susceptible to general improvements in socio-economic conditions.

It is probable that the practice of circumcision also has favoured the decline of chancroid in Europe, since the lesions of this disease are most commonly found on the prepuce. Although circumcision is performed in certain parts of Africa, it is not a common procedure among many tribes. In a group of 415 male venereal-disease patients seen in Salisbury, Southern Rhodesia, there were only 15 (3.6%) who had been circumcised, whereas in the venereal-disease clinics of London, England, approximately 60% of the males have been.

2. Incidence of Chancroid in Africa

The available data on the incidence of chancroid in many African countries are for the most part unreliable estimates based largely on clinical impressions, owing to the lack of adequate diagnostic facilities. All too frequently, darkfield examinations of genital lesions cannot be made nor skin tests with Ducrey vaccine antigen carried out. Moreover, serological tests are less reliable in differential diagnosis because of the prevalence of yaws in many areas.

The author has had the opportunity of conducting venereal-disease clinics in two African capitals, Accra, Gold Coast,⁷ and Salisbury, Southern Rhodesia.⁸ In each of these clinics there were facilities for making darkfield examinations, stained smears, skin tests, and serological tests for syphilis, and in each the frequency of chancroid was found to be comparatively high — 18% and 26% respectively of all venereal infections encountered.

TABLE I. RELATIVE FREQUENCY OF CHANCROID IN VENEREAL-DISEASE PATIENTS IN ACCRA AND SALISBURY

	Accra *		Salisbury **	
	Number	%	Number	%
Gonorrhoea	1,597	50.7	76	21.0
Urethritis	159	5.0	3	0.8
Syphilis	132	4.2	140	38.7
Chancroid	574	18.2	94	26.0
Lymphogranuloma venereum	432	13.7	12	3.3
Miscellaneous	258	8.2	37	10.2
Totals	3,152	100.0	362	100.0

* African venereal-disease admissions to the 37th General Military Hospital

** 362 consecutive African patients with venereal diseases attending the Native Infectious Diseases Hospital Clinic

The comparatively low relative incidence of syphilis in Accra perhaps reflects the prevalence of yaws in this region, since it is believed that the latter infection confers a certain degree of immunity against syphilis. The important point, however, is that without complete diagnostic facilities it would have been impossible to establish definitively the fact that chancroid is so commonly seen in these parts of Africa.

3. Diagnosis of Chancroid

In practice, chancroid is usually recognized by the clinical appearance of the presenting lesions, provided a diagnosis of syphilis can be excluded by darkfield examinations and serological tests. In addition, helpful information may be obtained from stained smears and cultures for *Haemophilus ducreyi*, and from the Ito-Reenstierna skin test with Ducrey vaccine. The limitations of these procedures are well known⁴ but in many countries of tropical Africa there are additional considerations that compound the diagnostic difficulties.

3.1 *Clinical signs of chancroid*

The usually painful, frequently multiple, soft sores of chancroid, with their spreading, ragged edges and tendency to bleed readily, are too well known to require extensive description. Nevertheless, a diagnosis of syphilis cannot readily be excluded without repeated darkfield examinations. The sites of the lesions in 100 cases of chancroid seen in the Gold Coast are shown below :

Prepuce	41
Shaft	23
Sulcus	21
Fraenum	10
Glans	2
Scrotum	2
Meatus	1

There are two important complications : (a) bubo formation, and (b) phagedena. The inguinal nodes on one or both sides may enlarge into a unilocular bubo which, unless aspirated, ordinarily bursts and is followed by chancroidal ulceration in the groin. This can usually be prevented by suitable therapy. Of the 100 cases mentioned above, 38 developed tender lymphadenitis, but, as a result of sulfonamide treatment, only eight bubos became fluctuant. Seven of these abscesses were aspirated and one burst spontaneously.

Phagedena is more common in patients with phimosis, and may be a very serious complication of chancroid. Cooper in 1819-20¹ picturesquely described “. . . cases in which the whole of the external organ, becoming infected with an erysipelatosus inflammation, gangrenes and falls off from

the pubes, leaving only the vestige of the bulb, in the form of a fleshy tubercle, behind the symphysis pubis." The author has seen such a case in a Mission hospital in Northern Nigeria. Fortunately, because of the ready availability of effective therapy, there were no complications of this kind in the present series of patients.

3.2 *Exclusion of syphilis*

3.2.1 *Darkfield examination.* Darkfield examinations are indispensable for accurate diagnosis, and no data on the incidence of syphilis and chancroid should be accepted as being accurate unless it is known that routine darkfield studies have been made.

Nevertheless, even repeatedly negative darkfield examinations do not exclude the existence of gummas of the genitalia and a positive examination does not exclude the possibility of a mixed infection with syphilis and chancroid. Such mixed infections are more common in areas with a high incidence of both diseases.

3.2.2 *Serological tests.* Negative serological tests are helpful in differentiating between syphilis and chancroid but, unless repeated over a period of weeks, do not exclude the existence of seronegative primary syphilis. In the United Kingdom, approximately one-third of all male patients with early syphilis are now seen in the early seronegative stage and, as more-adequate health services become available in Africa, an increasingly large percentage of cases there will be seen with negative serum reactions.

Positive serological reactions help very little, since a patient with latent syphilis may develop chancroid, and active seropositive primary syphilis and chancroid may coexist. An additional factor which complicates the situation in tropical Africa is the prevalence of yaws. This problem was found to be particularly confusing in the Gold Coast, where yaws is common. Serological tests for syphilis on 100 patients with chancroid in Accra, Gold Coast, gave the following results :

Negative Kahn and negative Ide tests . . .	51
Discrepant results between Kahn and Ide tests .	28
Positive Kahn and positive Ide tests	21

In the urban district of Salisbury in Southern Rhodesia, yaws does not exist to complicate the diagnostic problem. In some parts of this country there is a form of endemic syphilis, resembling bejel and called njovera,⁹ but in Salisbury itself syphilis is ordinarily transmitted venereally. Here positive serological reactions usually indicate syphilis and are so classified in table I.

Even with the help of darkfield examinations and serological tests for syphilis, clinical acumen is still indispensable for reaching a diagnosis in many cases. Genital sores in the African are often secondarily infected and frequently obscured by phimosis, and darkfield examinations are

therefore rather less reliable. Often the most helpful clinical sign of primary syphilis is the condition of the inguinal lymph nodes. The results of dark-field examinations and serological tests on 94 Southern Rhodesian male patients with penile sores are shown in table II, which indicates the limitations of these tests under the local conditions.

TABLE II. RESULTS OF DARKFIELD EXAMINATIONS AND SEROLOGICAL TESTS FOR SYPHILIS ON 94 AFRICAN PATIENTS WITH PENILE SORES (SOUTHERN RHODESIA)

Darkfield examination	Serological test for syphilis	Primary syphilis	Secondary syphilis	Chancroid	Totals
Positive	Negative	9	0	0	9
Positive	Positive	11	10	0	21
Negative	Negative	23	0	15	38
Negative	Positive	22	0	4	26
Totals		65	10	19	94

3.3 *Identification of Haemophilus ducreyi*

Under favourable conditions, the causative organism of chancroid, *H. ducreyi*, may be identified in stained smears or in cultures. The usefulness of smears is restricted by the fact that the Ducrey bacillus is not easily recognized among the masses of bacteria encountered in most genital lesions, especially in Africa. Moreover, morphologically similar organisms may be found in syphilitic chancres, and in female patients even when no lesion is present.

The organism can be cultured on artificial media, but the difficulties inherent in the method make it a procedure that is generally impracticable in many parts of Africa.

At Salisbury, some 570 smears taken from 243 male patients with genital sores were examined for *H. ducreyi*. Organisms morphologically resembling the bacillus were noted in 257 smears from 144 patients. The final diagnosis, after appropriate darkfield and serum tests had been made on these 144 patients, was as follows :

Chancroid	75
Primary syphilis	65
Granuloma inguinale	1
Balanitis	3

3.4 *Skin test*

The Ito-Reenstierna test for chancroid consists of the intradermal injection of Ducrey vaccine. The test becomes positive after the lesion has

been present for 8-24 days and thereafter remains positive throughout life. Hence it is possible for a patient to have a negative skin test in the presence of an active chancroidal lesion, and for a syphilitic chancre to be accompanied by a positive Ito-Reenstierna test owing to an earlier chancroidal infection. The test, therefore, is of limited value for the individual patient, although of great usefulness in estimating the prevalence of chancroid among various population groups. The results of prevalence studies of this nature are shown in table III.

TABLE III. REACTIONS TO THE ITO-REENSTIERNA SKIN TEST FOR CHANCROID, GOLD COAST AND SOUTHERN RHODESIA

Region	Group tested	Number tested	Number positive	% 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

These data indicate that chancroid is widely prevalent in these parts of Africa and that the disease is primarily an urban rather than a rural problem. No explanation is offered for the occurrence of positive skin tests in children, although it should be recorded that most of the positive reactors were children of prostitutes.

SUMMARY

Chancroid is now a rare disease in well developed countries, the decreasing incidence in Europe being probably largely attributable to improved standards of education and hygiene and perhaps also to the practice of circumcision. The disease continues, nevertheless, to be a health problem of considerable magnitude in certain other areas, such as the two investigated in this study, the Gold Coast and Southern Rhodesia.

The available data on the incidence of chancroid in Africa is mostly unreliable because of the lack of adequate diagnostic facilities. Such facilities were, however, provided in venereal-disease clinics in Accra, Gold Coast, and Salisbury, Southern Rhodesia, where the author found the frequency of chancroid to be 18% and 26% respectively of all venereal infection encountered.

The difficulties inherent in the diagnosis of chancroid are discussed, and the usefulness of various diagnostic procedures under African conditions is outlined. Darkfield examinations are indispensable for differentiating chancroid from syphilis, and negative serological tests are helpful, although not immediately conclusive. Diagnosis in Africa is also complicated by the prevalence of yaws. The presence of other bacteria from genital sores makes identification of *Haemophilus ducreyi* difficult.

In skin tests with Ducrey vaccine among various groups in the Gold Coast and Southern Rhodesia, 278 of 1,022 persons tested (27.2%) gave positive reactions. Organisms morphologically resembling *H. ducreyi* were noted in smears from 144 out of 243 male patients with genital sores: the final diagnosis revealed chancroid in 75 of these patients. Such data indicate that chancroid is widespread in the parts of Africa studied.

RÉSUMÉ

Dans les pays évolués, le chancre mou est devenu rare. C'est sans doute au développement de l'éducation et de l'hygiène, et peut-être aussi à la pratique de la circoncision, que l'on doit attribuer sa disparition progressive en Europe. Cette maladie continue, néanmoins, à poser un problème sanitaire très grave dans certaines autres régions, telles que la Côte de l'Or et la Rhodésie du Sud qui font l'objet de la présente étude.

Les données dont on dispose sur la fréquence du chancre mou en Afrique sont, dans l'ensemble, peu sûres, par suite du manque de moyens appropriés de diagnostic. Les dispensaires antivenériens d'Accra (Côte de l'Or) et de Salisbury (Rhodésie du Sud) sont, cependant, bien équipés sous ce rapport, et l'auteur y a constaté que le chancre mou représentait 18% et 26% respectivement de l'ensemble des cas de maladies vénériennes.

L'auteur examine les difficultés posées par le diagnostic du chancre mou et expose l'utilité des diverses méthodes de diagnostic, compte tenu des conditions qui prévalent en Afrique. Pour différencier le chancre mou de la syphilis, il est indispensable de procéder à des examens sur fond noir. Les séro-réactions négatives ont une valeur indicative, mais ne sont pas immédiatement concluantes. En Afrique, la fréquence du pian complique le diagnostic. La présence d'autres bactéries dans des lésions génitales rend difficile l'identification d'*Haemophilus ducreyi*.

A la suite d'intradermo-réactions avec le vaccin de Ducrey, pratiquées sur divers groupes d'habitants de la Côte de l'Or et de la Rhodésie du Sud, 278 personnes sur les 1,022 qui ont été soumises à l'épreuve (27,2%) ont présenté des réactions positives. On a observé des organismes ressemblant morphologiquement à *H. ducreyi* dans les frottis de 144 malades (sur un total de 243) du sexe masculin porteurs d'ulcérations génitales: le chancre mou a été, finalement, diagnostiqué chez 75 de ces malades. Ces constatations montrent que le chancre mou est très répandu dans les parties de l'Afrique qui ont fait l'objet de l'étude.

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