

SPECIAL ARTICLE

LEPROSY CONTROL IN THE SOUTHERN SUDAN

A COMPILATION FROM THE ANNUAL REPORTS

FOR 1929, 1930 AND 1931 ON

THE MEDICAL AND HEALTH WORK IN THE SUDAN

(DR. O. F. H. ATKEY, *Lately Director, Retired.*)

[Six years and more ago there was inaugurated in the Southern Sudan a most important experiment in leprosy control. This has not received as much attention as it deserves, doubtless because it has been dealt with chiefly in official reports. It was considered desirable to publish a statement about it, to supplement the recent article by Dr. Atkey [This JOURNAL 2 (1934) 193], which deals in detail with the distribution of the disease in that region and with the factors that apparently determine its prevalence. The only material available for such a statement consisted of the extensive excerpts from the official reports for 1929, 1930 and 1931 which were published in the "Colonial Medical Reports" section of the *Journal of Tropical Medicine and Hygiene* 34 (1931) 71; 35 (1932) 38; and 36 (1933) 21, respectively. None of these by itself was adequate, but the following compilation of them is fairly comprehensive. In this the material has been rearranged, but otherwise it has been modified only as required for coherence and reasonable economy of space. It is published with permission of the present health administration of the Sudan.—EDITOR.]

DISTRIBUTION OF LEPROSY IN THE SUDAN

The leprosy incidence in northern and central Sudan is very low. These provinces, in 1931, had been under organized medical administration for ten years. There is some reason to believe that during that time the incidence had diminished in this area, but if such is the case it can be attributed only to a general, very gradual raising of the standard of living, and to the gradual spread among the omdas and sheikhs of a recognition of the infectivity of this disease and the need for limiting the association of lepers in the general life of the village.

South of the sixth parallel the leprosy incidence becomes much heavier. The great majority of the lepers of the Sudan are to be found in the sleeping-sickness areas of Bahr-el-Ghazal and Mongalla

Provinces. Here the riverain tribes are more heavily infected than are the more northerly tribes, but the increased incidence does not become serious until the higher land is reached, approaching the divide between the Nile and the Congo water-sheds and adjacent to the Belgian Congo. Outside these areas, it was estimated in 1929, there were rather more than 1,000 cases, the majority of them being in northern Mongalla and northern Bahr-el-Ghazal, but outside these two provinces leprosy is a comparatively negligible factor. Probably only 5 per cent of all the cases in the Sudan are north of the tenth parallel.

There are four districts along the Nile-Congo divide which suffer from this heavy infection. These are, passing from the north southwards, Tembura, Yambio, Meridi and Yei. The heavily infected tribes here live in a country which, owing to the heavy *Glossina morsitans* infestation, is entirely devoid of cattle. The people thus live almost entirely on grain, roots and fruit. Eggs are very scarce and milk and flesh almost entirely absent from their diet. They have an intense craving for meat, which they will eat in the form of vermin and in any stage of decomposition. They are ardent fishermen, and occasionally get animal food by hunting.

INAUGURATION OF CONTROL WORK

The delay in dealing with leprosy in the Sudan was due to the prohibitive cost of feeding thousands of lepers. However, there was evidence that the disease was rapidly increasing in the southern portion. In Yambio district in one village 8.8 per cent of the inhabitants suffered from it, and a survey of the district revealed that 2.8 per cent of the population were infected, and at that it was believed that a considerable number of cases were concealed. It became evident that it was essential that measures should be taken to avert the disabling of a heavy percentage of the population.

In 1928 the plan was conceived of forming self-supporting leper settlements in the sleeping-sickness areas. To segregate the patients in places in which they could lead their normal lives, with their relatives, was possible because the measures previously adopted for sleeping sickness had familiarized the people with medical treatment and strict segregation, and the tribes concerned are exceptionally tractable. This plan was put into operation in 1929, and reached fulfilment in 1930.

There had been doubts whether leper colonies could be made self-supporting, but in the 1929 report it was stated that there was already evidence to show that, modelled on the lines adopted for sleeping-sickness settlements, they could be made self-supporting. At that time it was believed that all lepers then segregated in the sleeping-sickness areas, with the exception of the Meridi colony which was mostly composed of very advanced cases with few relatives living with them, would be self-supporting by the end of 1930. The lepers at Source Yubo, who had not yet had time to make cultivations of their own, were subsisting for the most part on the reserves of manioc planted in the sleeping-sickness settlement. It was anticipated that after 1931 no colony in the sleeping-sickness areas, except possibly that of Meridi, would require any ration except salt from the Government.

In the report cited it was added that it was doubtful whether leper colonies could be made self-supporting unless relatives should be allowed to accompany their sick. Among the southern pagan tribes of the Sudan the family tie is strong and segregation without relatives would cause resentment. Some of the healthy relatives would become infected living in the colonies, but the treated leper is, presumably, less contagious than the untreated; the relatives are under close medical supervision and obtain treatment at the first sign of disease; and in the conditions in which they live in a colony their health is so much better maintained throughout the year that their liability to infection should be lessened.

At Source Yubo an inspection (in 1929) of all the relatives living in the colony revealed an infection of 23 per cent. At the same time an inspection was made of a number of relatives who were making application to live in the colony; among these also the percentage of infections was 23 per cent. It is probable that all these cases acquired the infection before entering the colony. Time is needed to obtain evidence of the infectivity of the treated leper.

In the reports here compiled is no description of the settlements. There is no definite statement as to the number established, but it seems that there are three of them: (1) Source Yubo (Tembura District), (2) Li Rangu (Yambio District)—both of these being in southern Bahr-el-Ghazal; and (3) Meridi, which is actually in Mongalla Province but is administered from Yubo. There was a mission colony at Omdurman, where in 1930 there were 50 in-patients, many

from outlying provinces, and where 19 out-patients were being treated; on account of expense this colony was being reduced to meet only local needs. Mention is also made of a settlement in the western Mongalla region, at Lui, where 180 cases were being cared for, and of colonies at Wau and Amadi; these were apparently also operated by missions, which similarly cared for still smaller groups elsewhere.

On December 31, 1930, there was in the settlements a total of 5,354 patients, believed to be almost five-sixths of the lepers of the Sudan. A great majority (4,379) had come from the area adjacent to the Belgian Congo, and of the rest 699 were from the area adjacent to the Uganda border. During that year (1930) 3,309 cases had been admitted—more than the total admissions for the previous years together—and 711 symptom-free cases and 105 burnt-out cases had been discharged.¹

In the following year (1931) it was reported that of the 2,900 cases diagnosed and charted in Tembura district, 70 per cent had been admitted to the settlement at Source Yubo, and of the 3,100 cases charted in the Yambio District, 87 per cent had been admitted to Li Rangu. These cases had been submitted to close scrutiny, and at both settlements it had been considered safe and advisable to return to their villages some 40 per cent of the cases as being non-infectious and non-progressive. At Meridi, 28 per cent had been so returned. All these cases were to be kept under observation.

These settlements (not including the Omdurman Colony) were being maintained, exclusive of drugs, dressings and medical staff, at a cost of £2,500 (English), or less than ten shillings a year per leper.

The 1930 report pointed out the need of three more settlements, one to be at Raga in western Bahr-el-Ghazal, where there were 340 registered cases untreated and at large, and two in the central district of Mongalla, east and west of the Nile, where several hundreds of cases were registered. The financial state of the country did not permit this at the time. However, an experiment was being tried in the Bari country of Mongalla, whereby the local chief had been encouraged to form a colony in the neighborhood of a dispensary where treatment could be obtained. That was considered

¹ In the 1931 report are several tables dealing with the types of cases, infection of relatives, fertility and infant mortality, but these can not be reproduced in this compilation.

possibly the solution of the problem of leprosy for the rest of the Sudan, i.e., with the co-operation of the native administration to form clusters of lepers living their normal lives with their relatives around the nearest dispensaries, and in the bigger towns to encourage the people to attend hospitals as out-patients. The trouble in the past, it is stated, has been that leprosy has been regarded as an incurable disease.

TREATMENT

Comparatively little is said about treatment in the material at hand. In 1931 it was stated that the releases that had been made from the settlements were in some cases a result of improvement due to treatment and improved conditions of life, but the majority of the cases were released because they were not progressive and for all practical purposes not infectious.

Treatment, according to the 1930 report, had been almost entirely by alepol, which "causes early cases to react to treatment quickly." The doses had reached as much as 8 cc. of a 6 per cent solution. The consensus of opinion was that the dose originally recommended, i.e., 5 cc. of 4 per cent solution, is inadequate. The intravenous route had been most commonly used. In Mongalla, intramuscular injections had proved satisfactory. Subcutaneous injections, even with the addition of novocain, had in all cases produced much pain. Results from the intravenous method appeared as good as obtained by the intramuscular or subcutaneous routes, the only obvious disadvantage being the common thrombosis of veins. Courses of weekly injections lasting three months, followed by a rest, had been the rule. This had entailed giving 400 injections at Li Rangu every day of the week.

Trichloracetic acid applied locally to patches had proved a useful adjunct and was popular. Hydnocarpus oil proved to be the best dressing for ulcers. One nodular case had been treated with hydno-carin. Further trial was needed with this drug, "which appears to be the best yet produced." Thirteen cases had been treated with solganol, with indifferent results.

Regarding the treatment at the Church Missionary Society hospital at Omdurman, there were (1930) nineteen out-patients "attending regularly with satisfactory results." The in-patients were mostly advanced cases with little chance of recovery.

DISPENSARY PLAN

An effort was being made—it was written of 1931—to train Sanitary Hakims with a view to establishing a network of dispensaries in the heavily endemic area, and to group the lepers around dispensaries in their own districts, thus insuring supervision and treatment with the least possible disturbance of normal tribal life and their relations from the district and authority of their own chiefs.

The difficulty that was being encountered in carrying out this policy was the extreme scarcity in these districts of young men who have a working knowledge of either English or Arabic, without which it is not possible to give the necessary training. Every effort was being made to teach English to the more promising hospital attendants and so to obtain a certain number of young men suitable for higher training. It was hoped to be able to open one or two dispensaries towards the end of 1932.

SUMMARY AND CONCLUSIONS

In the area north of the sixth parallel it is considered that leprosy can be best dealt with by: (1) propaganda among tribal sheikhs or chiefs as to the infectivity of the disease and the necessity for relative isolation, i.e., the patient to be prohibited from eating, smoking or sharing a hut with an uninfected person; (2) wherever possible moving the leper to the near vicinity of a hospital or dispensary so as to insure treatment; and (3) in certain cases making special provision for the accommodation and treatment of lepers near a hospital.

South of the sixth parallel the leprosy problem is more serious; in certain districts as much as 4.3 per cent of the population is infected. In order to deal with the immediate situation large settlements have been formed, and some 70 per cent of the total leper population have been admitted to these camps. By this means the lepers have been brought under close observation and regular treatment. The problem of the infectivity of the disease has been studied under conditions closely resembling those of normal village life, and observations have been made on the degree of improvement which can be expected from regular treatment and from satisfactory conditions of life. In addition, the lepers and their relations are being taught the simple precautions that are necessary to take to avoid

infection. It has been found possible to repatriate to their villages some 40 per cent of these lepers.

Conclusions.—(1) A large percentage of early cutaneous cases remain stationary, and do not require treatment or segregation. If adverse conditions obtain, such cases may rapidly acquire active signs. It is not only unnecessary but unwise to bring such cases into a leprosy settlement unless they become "open" cases.

(2) Strict segregation of highly infective cases is a very beneficial measure in prophylaxis and should be extended.

(3) Treatment by the present methods, though not spectacularly curative, certainly tends to keep the disease from advancing.

(4) Measures intended to improve the living conditions, and especially the quality of the food, are more important than actual drug treatment. The salt ration must be maintained.

(5) Bush dispensaries manned by trained native staffs should be developed to deal with the leprosy problem on the spot. Lepers could be housed near such dispensaries and while leading their normal lives still be under frequent supervision. Highly infective cases only need be removed to the central camp. It will take at least two years to train a sufficient staff for this.

(6) With the staff and resources available only routine work can be done, but we are gradually accumulating data of epidemiological value, which should in time point the way to a sounder prophylaxis.

(7) With regard to permitting relatives to live with the lepers, it must be remembered that, though there is a fresh infection of 3 to 4 per cent in the settlement, in Li Rangu practically all, and in Yubo 50 per cent, of the relatives living there have for an average period of five years been in close contact with their leper relatives outside before entering the settlement, and fresh infections were to be expected from them in any case.