A Clinical Description of the Main Nutritional Disorders Encountered in the Salisbury Native Hospital in a Series of 54 Consecutive Cases Studied in 1954

BY

JOHN MILLER-CRANKO,
M.B., CH.B. (Cape Town), D.P.H.

AND

MICHAEL GELFAND,
O.B.E., M.D. (Cape Town), F.R.C.P., D.P.H.
Salisbury Native Hospital.

There are already so many papers dealing with malnutrition and deficiency states in Africa that another paper seems unnecessary. However, we consider that a description of the main clinical features of deficiency states seen by us in the medical wards of the Native Hospital, Salisbury, would be of interest, especially as this does not appear to have been done before. It might serve of some value to doctors engaged in clinical practice in Mashonaland, as the patterns of these disorders vary in the different territories, largely due to the environmental feeding and sociological habits of the indigenous population. The prevailing parasitic and intestinal diseases too have some bearing on the ultimate pattern a deficiency disease assumes. For instance, in some parts of Africa pellagra and scurvy are extremely rare, whereas vitamin A deficiency and even beri beri are common.

Fig. 1—The characteristic dermatosis in kwashiorkor.

It is not easy from the literature to decide from the descriptions given elsewhere in Africa what approximates the different patterns we meet in Salisbury. Possibly the nearest to what is found in Mashonaland is that given by Abbott (1950) in his survey of nutritional ill-health among the Azande of the Southern Sudan. For instance, the signs of dyssebacia, permanent gooseflesh and folliculosis were commonly found (vitamin A and riboflavin deficiencies). On the other hand, classical pellagra is not so often seen among the Azande, whereas in Mashonaland it occurs in all its typical forms. Another paper which described many of the clinical features of malnutrition is by MacGregor and Smith (1952), of Gambia, who carried out a nutritional and parasitological survey in a rural village and found that the usual pattern was of deficiency of the vitamin B complex, manifested by dyssebacia, cheilosis and angular stomatitis.

Fig. 2—Folliculosis. Note the small follicles set in a dry rough skin.

The majority of publications, however, deal with special aspects of nutritional disease. For instance, Trowell (1937), of Uganda, has for many years constantly stressed the syndrome of malignant malnutrition (kwashiorkor) which, while occurring commonly in infants, may be seen also in adults in its fully fledged form, viz., oedema, depigmentation of the skin, desquamative dermatosis, hair changes and diarrhoea. The Belgians have for long also stressed this in the child and adult and labelled the condition *diboba* (Pieraerts, 1942). However, other

workers have not been struck by the kwashiorkor syndrome of adults, although admitting its frequency in the African infant and child. In Southern Rhodesia kwashiorkor of the child is common and has been described previously (Gelfand, 1946), but the adult form is occasionally seen also in Mashonaland (Fig. 1).

Fig. 3—Folliculosis. Another case showing the small papules.

Descriptions of scurvy amongst Africans are not too many. Most have emanated from the Union. This is surprising, as one would have expected more reports from other territories in Africa than have appeared.

It is not clear from the literature how common beri beri is in Africa. Charters (1943) has described an outbreak among Somali troops in East Africa living on rice, and in South Africa Suzman (1942) describes the disease from the Rand, including cardiac beri beri and polyneuritis.

Pellagra, however, has been recorded from most territories, especially from Southern Africa, Nyasaland (Stannus, 1912, and Shelley, 1925), Southern Rhodesia (Nightingale, 1912) and from the Union Kark (1943), Suzman (1942) and Gillman, T. & J. (1948) have given excellent descriptions of classical pellagra.

MATERIAL

In this paper we have recorded the main clinical types and features of deficiency disease as it affects the African adult in Mashonaland. That nutritional disease is frequent there can be no question, but in this study we do not deal with the subject of incidence, but merely describe the main clinical features encountered.

The great majority of our African males are employed in the many industries in and around the periphery of the city of Salisbury. A large proportion of them find employment in the tobacco industry (grading sheds, etc.) and many other industrial enterprises and factories. A not inconsiderable proportion come from the surrounding farms, many of which house considerable numbers of employees.

The food received by the labourer has much the same pattern. Where it is sufficient, it consists of a good supply of maize (about 1½ lbs. per day) as well as about 2½ lbs. of meat per week. Some receive more, but others report that the meat may be given only once a week or even not at all, but little reliance can be placed on the labourers' statements—they are notably inconsistent. Fresh vegetables are not popular and beans and monkey nuts are often preferred. No beer is given as a ration, but no doubt most of the employees find their way to the nearby beerhall. The food is given already cooked, and as a rule wages *in lieu* of rations are discouraged.

Fig. 4—*Hypertrophic Pigmented Follicles*—a more pronounced form of folliculosis.

The standard Government scale laid down for Africans in employment is as follows:—

Daily: 1½ lbs. mealie meal or Native cereal (sorghum, munga, rice).

Weekly: meat (or fresh fish), 2½ lbs.; groundnuts (shelled), 2 lbs.; beans (dried), 1 lb.; fresh vegetables, 2 lbs.; sweet potatoes, 7 lbs.; salt, ¼ lb.

The majority of the labourers are alien Natives, i.e., they are gathered from the neigh-

bouring territories of Nyasaland, Northern Rhodesia, Angola and Mozambique. Almost all are infested with bilharziasis and a fair proportion also harbour hookworm, and it can be said that almost all have malaria. About 15 to 20 per cent. have a positive blood Wassermann reaction. They are mostly of the more primitive type of African and understand little of European methods and customs. Their habits are still much the same as are found in the kraals and they would resist any serious alteration to their diet. All of them would prefer a "witchdoctor" if one could be got early before consenting to come for treatment to hospital. Others, after their discharge from the hospital, make their way to them despite our efforts.

The climate and environment must have some effect on nutrition. The climate of Salisbury is much the same in essentials as that found elsewhere in South Central Africa. There is, firstly, a fairly heavy rainy season of about 30 to 45 inches of rain from mid-October to early April, after which rains do not usually fall until the next October. There is then a relatively long dry spell, and from August to November the dryness may be intense. Food is scarce from October to the end of January, but Natives in employment are of course guaranteed a constant supply of rations as already mentioned.

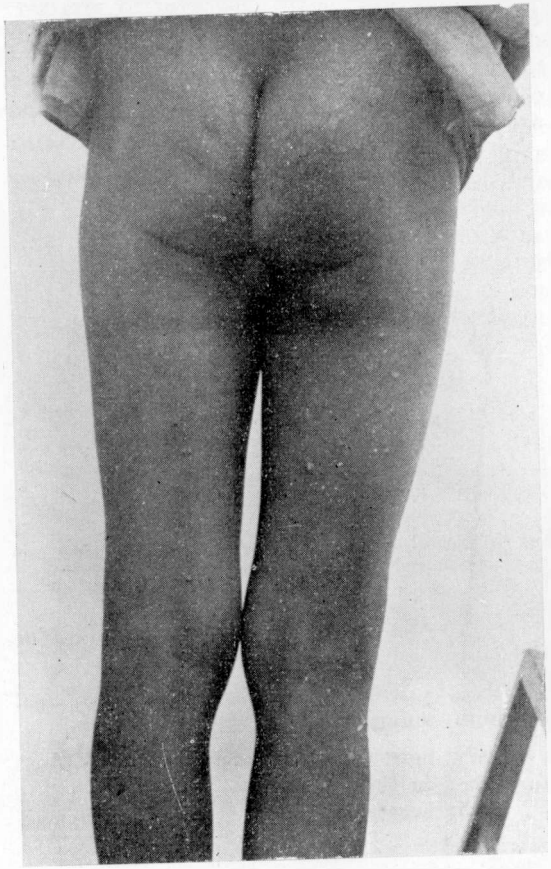

Fig. 5—Hypertrophic pigmented follicles on thighs and buttocks.

Fig. 6—The collarette of pellagra.

METHOD

Any patient admitted to hospital with clear signs of a nutritional disorder was examined. Cases, however, where the cause of the nutritional disorder could be attributed in large measure to a more serious underlying disease such as tuberculosis, chronic nephritis, cardiac disorder, cirrhosis of the liver, were not included. In other words, we only studied cases who were referred by the outpatient's doctor as suffering from a disorder of nutrition and which we agreed was so.

After the patient's admission he was examined fully, and this included an examination of his eyes, his face, lips, gums, teeth, tongue and parotid glands. The limbs and trunk were examined for the presence of a skin eruption. The condition of the nails, hair, heart and scrotum was noted in each case. The nervous system and mental capacity of the individual were tested and the bowel function recorded. A blood count was done routinely, and in each case the urine and stool specimens were examined microscopically.

RESULTS

In the 54 cases studied during 1954, 13 (24 per cent.) could be classified as vitamin A deficiency and 22 conformed to pellagra (40.7 per cent.). There was only one case of pure scurvy

(2 per cent. roughly). Twelve cases had both vitamin A and vitamin B complex syndrome (22 per cent.) and six cases (11 per cent.) showed the "dry skin or pellagroid type" in which the skin is dry, cracked, but not amounting to classical pellagra. Although the cases were grouped into the main recognised types of deficiency diseases, yet there were very few seen in whom there was no overlapping of some signs. In other words, we may expect a variety in the combination of the individual signs and symptoms.

Skin Changes

The most obvious single sign of nutritional disorder in the Mashona and which occurs in the great majority of cases is a dermatosis. However, the pattern varies enormously and there may be much overlapping. Yet in any given case the pattern falls into one of the following categories:—

1. *Folliculosis and Dryish Skin.*—The follicles, usually 1 to 2 mm. in size, are usually seen in the region of (a) *the elbows*, above and below,

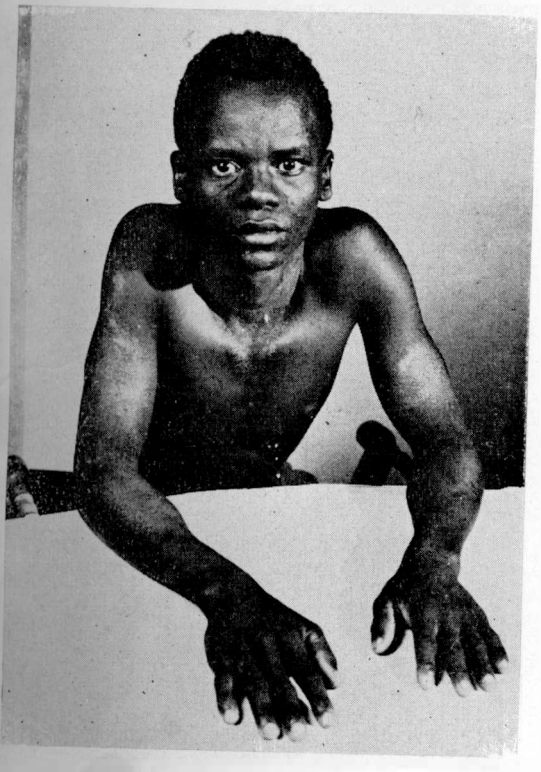

Fig. 7—Another classical case of pellagra, showing the distribution of the dermatosis.

and more numerous on the extensor aspects; (b) *the thighs*, on the lateral and anterior aspects and with most of the lesions towards the upper aspects; (c) *the buttocks* extending upwards and laterally. In a number of cases the folliculosis is profuse on the face and over the forehead. The lesions are as a rule slightly larger than those on the limbs already described and may be mistaken for acne. The skin, especially on the limbs and on the trunk, tends to be slightly of a lighter black colour, dry and, when scraped, appears as if white "muralo" has been covered over it (Figs. 2 and 3). On the face, however, the skin of the cheeks and malar regions may be of a distinct blackish and glistening colour. In other cases there is coalescence of the follicles, giving this part of the face a coarse heaped irregular appearance. Probably a more advanced stage of the typical follicle just described is a larger follicle from 4 to 6 mm. in diameter, well raised above the surface and with a black centre at its apex—one could better describe this as a nodule and we have referred to it as "the hypertrophic pigmented follicle (Figs. 4 and 5). There may be many, and whilst the majority reach this large size a certain number are smaller and conform to those already described under the term "folliculosis." These nodules are best seen on the limbs, elbows and thighs and buttocks behind, but also sometimes on the face.

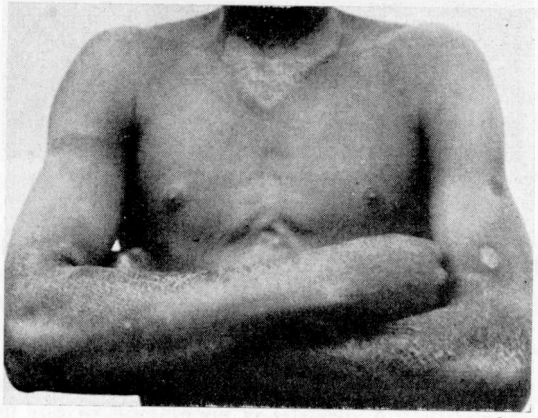

Fig. 8—Pellagra in a Native male, showing the rash on the neck and forearms.

A certain number of these patients complain of night blindness and a few show conjunctival changes, like Bitot's spots. It is extremely rare to find a case complaining of night blindness who does not show these follicles, and so we have regarded them as being due to a vitamin A deficiency.

2. *Pellagra.*—Next in frequency to the folliculosis comes the rash of pellagra, the essential feature of which is the desquamative peeling rash. The affected skin is *black or darkish brown*, and when it peels a glistening thin and smooth skin is left underneath. The common sites for the dermatosis are:—

(a) Around the lower parts of the neck, often encircling it in the form of a collarette, although at times this is incomplete. Not all cases have the collarette and in a few cases there is only a collarette, the rest of the body being clear (Fig. 6).

(b) Along the extensor and ulnar parts of the forearm (Figs. 7 and 8).

(c) The outer aspects of the legs.

(d) Sometimes on the back, localised to small areas.

Fig. 9—Dry skin or pellagroid type.

The rash itself is diffuse and splits or cracks frequently, and on the shins it may have a mosaic pattern. Many of the pellagra cases show other signs, but these are not as striking as the dermatosis. For instance, a good number have follicular keratosis and a few cheilosis or angular stomatitis. A glossitis is uncommon in our pellagra cases and a diarrhoea may or may not be seen. The dermatitis and varying degrees of dementia are fairly common. Some of the cases are mentally confused for many days unless treatment is instituted. In other cases the confusion is mild and confined mostly to the nights or parts of the daytime. But with the institution of vitamin therapy they make a relatively prompt response and recover fairly quickly to what by ordinary standards is normal.

Pellagra is met throughout the year, but mainly in the spring months.

Quite a number of typical pellagra cases have no mental changes, but we are not able to state how many cases of pellagra show mental changes without the dermatitis. Diagnosis would then be difficult, but it is possible that such cases do occur. For instance, we have met cases of pellagra with mental confusion, the rash being confined to only small sections of the chest or a portion of the elbows, and it is quite possible that there are cases showing no rash.

3. *Pellagroid or Dry Skin Type.*—A not uncommon manifestation of the dermatosis seen in our cases of nutritional disease is where the skin is dry, has a greyish dull and lustreless colour, is slightly scaly and when rubbed leaves

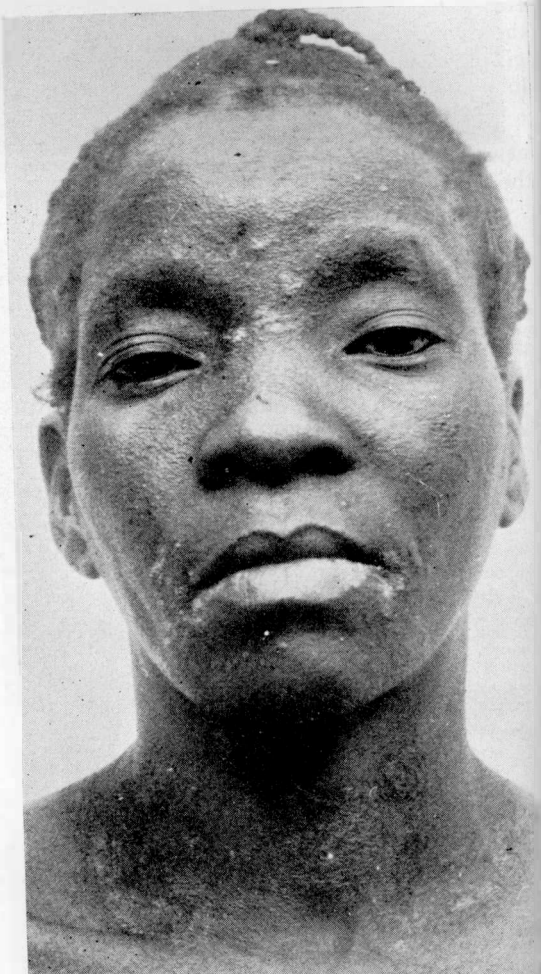

Fig. 10—Follicular seborrhoea on the face. The patient has pellagra.

behind a whitish track. The rash is rather of the same distribution as classical pellagra, but is usually much more widespread, involving the abdominal wall, and quite often, in addition, the legs and arms. We consider this to be probably pellagra, but are not certain and therefore refer to it as the pellagroid type (Fig. 9).

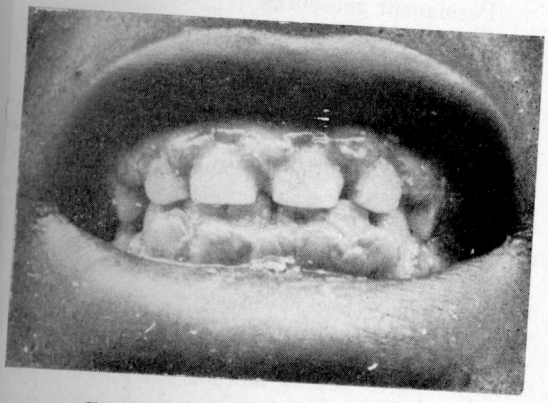

Fig. 11—The spongy gums of scurvy.

4. *Follicular Seborrhoea.*—Not uncommonly one meets cases in which follicular seborrhoea on the butterfly area of the face is striking and forms the main feature with other skin changes like dryness and flakiness being either less prominent or absent (Fig. 10).

5. *Scurvy.*—An important deficiency disorder seen is scurvy, in which the patient has classical nodes and swellings of the gums as well as a diffuse tender swelling in one of the muscle groups. In addition, folliculosis as already described with a dry skin is present in almost all cases.

The gums between the margins are swollen, with nodes of a purplish blue colour projecting towards the teeth. Both upper and lower gums may show the nodes or they may only be seen on one of the gums, and then it is usually the lower (Fig. 11). Also characteristic of scurvy is a very tender lump in a muscle group which is usually the calf. It is a diffuse hard swelling attached to the skin and which resolves slowly. Subperiosteal haemorrhages in our experience are not seen.

Important additional signs of nutritional disease found in any one of the forms described include cheilosis, angular stomatitis, scrotal dermatitis, gynaecomastia, swelling of the parotid glands. It should be pointed out here that some of these signs may be caused by disorders other than nutrition. For instance, there are

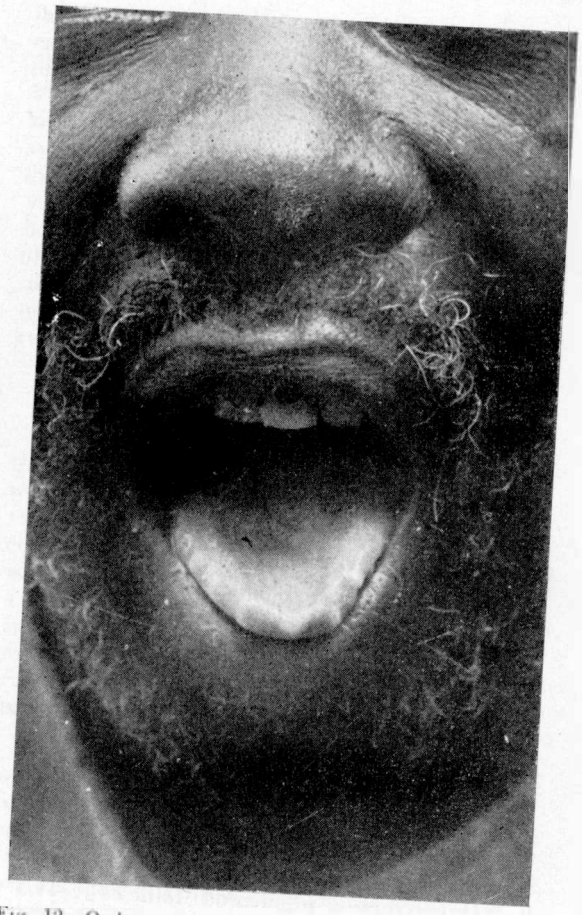

Fig. 12—Oedema of the tongue, showing the indentations produced by the teeth.

several other important causes of gynaecomastia in the African.

The following individual signs and symptoms, most of which may be attributed or associated with nutritional disease, expressed as a percentage, were seen in the 54 cases:—

Signs Found	*Expressed as a Percentage*
(A) *Systemic:*	
Swollen Features	1.8
Thin and wasted	24.0
Well covered	63.0
Mental changes	9.2
Watery stools	24.0
Frequent stools	16.9
Scanty hair	9.2
Pigmented conjunctivae	42.5
Bitot spots	1.8
Thickened conjunctivae	48.1

Signs Found	*Expressed as a Percentage*
Cheilosis	48.1
Angular stomatitis	20.3
Swelling of the tongue (Fig. 12)	5.5
Tongue fissures	3.7
Gums bleed easily	3.7
Gums boggy	5.5
Scurvy buds	5.5
Swollen gums	3.7
Gingivitis	16.6
Parotid swelling	16.6
Collarette of pellagra	25.9
(B) *Skin*:	
Face—	
Desquamation	7.4
Pigmentation	35.1
Folliculosis	40.7
Dyssebacia	50.0
Dry skin	20.3
Hypertrophic pigmented follicles	7.4
Arms—	
Permanent gooseflesh	27.7
Hypertrophic pigmented follicles	33.7
Fine wrinkling	24.0
Pigmentation	48.1
Pellagra skin	27.7
Pigmented groin with (without scrotal eczema)	11.1
Legs—	
Permanent gooseflesh	25.9
Hypertrophic pigmented follicles	44.4
Fine wrinkling	38.3
Pigmentation	50.0
Pellagra skin	5.3
Coarse wrinkling	16.6
Dry fine peeling	11.1
Lower legs shiny	28.9
Dry	38.3
Ankles—	
Pigmentation	25.9
Wrinkling	53.7
Thickening	25.9
Dry	35.1
Feet—	
Pigmentation	16.6
Wrinkling	33.7
Hands—	
Permanent gooseflesh	1.8
Pigmentation	18.5
Dry wrinkling	9.2

SUMMARY

The main patterns seen in 54 consecutive cases of nutritional disease admitted to the Salisbury African Hospital are described. Although a considerable degree of overlapping was noted, the most common type encountered was pellagra (22 cases). Next came deficiency in vitamin A (13). Twelve cases were considered to be a mixture of vitamin A and vitamin B complex deficiency disorders. There was one case of "pure" scurvy and six cases had mainly dry skin ("dry skin type"). A description of the dermatoses met with in the series is given.

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