

A Case of Multiple Spontaneous Ulcer Formation in a Post-Measles Child

BY

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AND

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E.M., a two-year-old African male, was admitted to Harari African Hospital on December 8th, 1966, with a history of having developed measles two weeks before admission. Three days after the development of the rash, blisters appeared on the skin and these broke down into deep, well-defined ulcers, most of them being circular in shape. He had been treated three days before admission by an outside doctor who had given penicillin injections.

He was the only child of healthy parents and there was nothing significant in the past history.

Dietetic History and Nutrition

The mother, when questioned through an interpreter, said that the patient had received sadza (maize porridge), tea, milk and nuts. His weight on admission was 27 lbs. The feet showed oedema, which disappeared after a blood transfusion and administration of Lanoxin, given because there was evidence of heart failure probably due to severe anaemia.

The serum albumin was still depressed after the transfusion (1.2 g.%), rising to 2.8 g.% two weeks after admission. Protein malnutrition was not clinically recognisable by the presence of signs of kwashiorkor in hair or skin.

Examination (on December 8th, 1966)

A miserable, well-nourished child with 47 ulcers, of which 32 were distributed on the lower limbs. The ulcers were well-defined and punched-out, varying in size from a few millimetres to 3½ cms. There was very little inflammatory reaction around these ulcers. Some of them exhibited a central, black, necrotic slough. The depth varied from full skin thickness, through the subcutaneous fat to the muscle layers. The ulcer craters were secondarily infected but no foetor was present (See Fig. 1 and Fig. 2).

The child was severely anaemic. The temperature was 100°F. He had slight angular stomatitis. Enlarged glands were noted in both groins

and axillae. The glands in the left inguinal region later suppurated and an abscess was incised; culture—*Staphylococcal aureus*.

Cardiovascular System: There was a tachycardia with engorgement of the neck veins, and a praecordial systolic murmur.

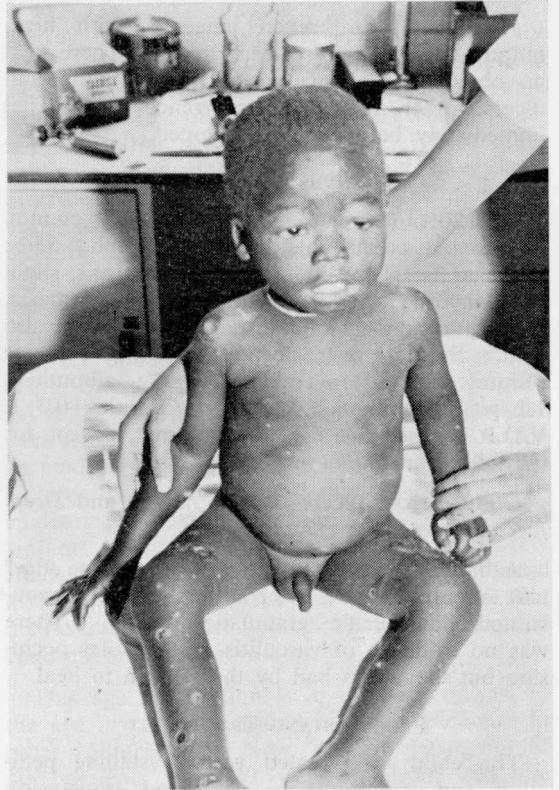


Fig. 1.—Condition at time of admission showing the distribution of the ulcers mainly on the legs.

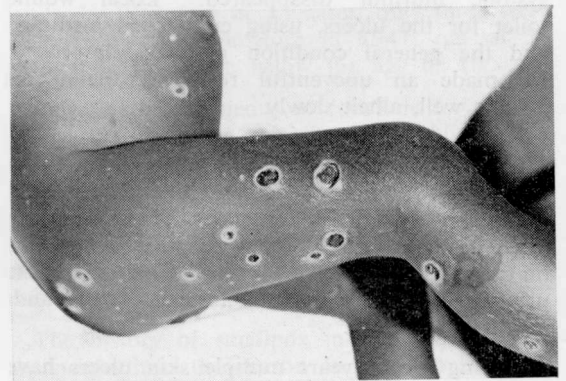


Fig. 2.—Photograph of the ulcers at the time of admission.

Respiratory System: Fine crepitations in both lower lobes.

Abdomen: The liver edge was palpable 6-7 cms. below the costal margin; the spleen was not palpable.

DIAGNOSIS

A diagnosis of severe anaemia with high-output cardiac failure was made. There was no obvious aetiological cause for the numerous ulcers, other than the occurrence of measles immediately before they developed.

INVESTIGATIONS

Hb. 20% (2.5 g.%), W.B.C. 13,200 cu.mm. Differential count: neutr., 44%; lymph., 55%; mono., 1%. The film showed anisocytosis, slight poikilocytosis and moderate hypochromasia. Moderate numbers of late normoblasts were also seen. Sickling test: negative. Serum proteins (Biuret Method): Total 5.6 g.%; albumin—1.2 g.%; globulin—4.4 g.%; A/G ratio—0.3/1. V.D.R.L.—negative. Urine—normal, except for ova of *S. haematobium*; Stool—normal.

Culture from ulcers—*Staph. aureus* and *Strep. faecalis*.

A biopsy specimen from the edge of one ulcer was taken two weeks after admission and demonstrated non-specific granulation tissue. There was no evidence of vasculitis or arteriolar occlusion but the ulcers had by then begun to heal.

PROGRESS AND TREATMENT

The child was treated with crystalline penicillin and streptomycin. A blood transfusion was given on the day of admission, and Lanoxin for the cardiac failure. The oedema and the systolic murmur disappeared. Local wound toilet for the ulcers, using eusol, was instituted and the general condition gradually improved. He made an uneventful recovery, the ulcers healing well, albeit slowly.

DISCUSSION

The only apparent aetiology was measles, the rash preceding the appearance of the ulcers by three days; possibly a local coagulative necrosis on a vascular basis was responsible for these ulcers because of the virtual absence of surrounding tissue reaction.

During recent years multiple skin ulcers have been seen in the Paediatric Department at Harari Hospital in four or five young patients, apparently as a sequel to measles.

A case clinically similar to the present one was reported by Forbes & Gelfand (1958). Theirs was a three-year-old African boy. The ulcers were mainly on the chest, back and face, varying in diameter from 2 mm. to 2 cm. Clinically he appeared to be well-nourished but the serum albumin was 1.6 g.%. Measles was not known to have preceded the appearance of the ulcers in this child.

Ulcers caused by mycobacterial infections of the skin are occasionally encountered, more especially in the tropical belt of Africa (Janssens *et al.*, 1958; Dodge & Lunn, 1962; Anderson, 1965). At the beginning they are more indolent than in our case and eventually much more extensive; the acid-fast bacilli are found in the undermined edges of the ulcer and there is induration of the surrounding tissue extending up to 15 cm. The appearance and behaviour of micobacterial ulceration bears no resemblance to the multiple circular ulcers which occurred in our patient.

Also different was the case described by Gelfand (1957) as *dermatitis gangrenosa infantum*. Gelfand discussed the possible association with *cancrem oris* and Fournier's syndrome (gangrene of the scrotal skin).

Jelliffe (1952) reported that necrosis of the skin in children, usually associated with malnutrition, occurs chiefly between the ages of two and five years, and considered that *cancrem oris* is pre-conditioned in this way. However, in the experience of physicians working in tropical countries, malnutrition is by no means an invariable concomitant. For example, Jelliffe *et al.* (1962) carried out a field survey in the West Nile District of Uganda. These observers studied a large sample of the children of the Sudanic Lugbara tribe, who live in the Eastern bush-covered lowlands of the West Nile District, situated between the White (or Albert) Nile River and the Congo border. These Eastern lowlands, approximately 2,000 feet above sea level, slope towards the left bank of the Nile River, and, receiving very little rain, are subject to drought. The lowland Lugbara people live mostly in the traditional way without much migration of labour. Impressions based on dispensary and hospital experience indicated that tropical ulcers were very common and were only exceeded in frequency by M.T. malaria and Mansonal schistosomiasis; and they seemed commoner than malnutrition or tuberculosis. The survey among the children of the Lugbara

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covered 413 infants under one year old, and 376 children one to four years old. "Sores" and tropical ulcers were the commonest of the skin disorders listed and scabies was the second commonest. This survey was carried out in the month of January (described as the height of the ulcer "season"), and 17% of the infants and 30% of the pre-school children exhibited sores and tropical ulcers, whereas kwashiorkor and nutritional marasmus affected less than 1% of them. Infestation by bugs, scabies and cockroaches was almost invariable in the overcrowded huts constructed of wattle, mud and thatch. From this report it would seem likely that various local insults to the skin contributed much more to the aetiology of the tropical ulcers seen than did malnutrition.

It seems quite certain that the so-called "tropical ulcers" can be caused by a variety of agents, acting either singly or, more often, in combination. The mode of development, the character of the ulceration, the bacteriological and histological features, and concomitants such as infection, malnutrition, anaemia and parasitism, all need to be studied.

SUMMARY

In the case now reported, the general condition of the child was not that of gross malnutrition, although the serum albumin was low. From the history and the clinical findings it was concluded that measles was the causative factor. In Rhodesia, measles is a much more severe disease than in Western countries and there is a high rate of complications.

REFERENCES

- ANDERSON, F. O. (1965). *C. Afr. J. Med.*, **11**, 131.
DODGE, O. G. & LUNN, H. F. (1962). *J. trop. Med. and Hyg.*, **65**, 139.
FORBES, J. & GELFAND, M. (1958). *C. Afr. J. Med.*, **4**, 239.
GELFAND, M. (1957). *C. Afr. J. Med.*, **3**, 187.
JANSSENS, P. G., QUERTINNON, M. J., SIENIAWSKI, J. & GATTI, F. (1958). *Trop. geogr. Med.*, **11**, 293.
JELLIFFE, D. B. (1952). *Trans. Roy. Soc. trop. Med and Hyg.*, **46**, 13.
JELLIFFE, D. B., BENNETT, F. J., WHITE, R. H. R., CULLINAN, T. R. & JELLIFFE, E. F. P. (1962). *Trop. geogr. Med.*, **14**, 33.

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Age Distribution of Patients in Endemic Smallpox

PART II

BY

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During the recent epidemic of smallpox in the Abercorn district of Zambia it was noted that with only three exceptions all the patients were children. Most of the patients were young children below the age of five years. Where other epidemics occurring in this region have been described, and where the age distribution has been noted, a similar preponderance of child patients has obtained. Mowat Sword, describing a smallpox epidemic in Nyasaland in 1960, found that 90.7 per cent. of his patients were children below the age of 10 (Mowat Sword, 1961). Similarly, Conacher, describing an epidemic of variola minor in Southern Tanganyika in 1953, found that 418 out of 492 patients were below 10 years old (Conacher, 1957). Of an epidemic in Zambia in 1955 it was noted that children were more commonly affected; of an epidemic in Nyasaland in 1930 it was noted "infants and young children have been largely affected in this epidemic"; and of an epidemic in Marandellas, Southern Rhodesia, in 1923 that it was almost entirely confined to unvaccinated children and young infants.

This age distribution is in marked contrast to the age distributions found in other epidemics in other countries. In New York in 1930, out of 100 patients only 29 were children, and the average age of the patients was 30. In Glasgow in 1942, out of 16 patients only four were younger than 15 years old. In Tilburg, Netherlands, in 1951, out of 23 cases, only three were children. In Staffordshire in 1947, out of 30 cases only two were below the age of 10.

It would be erroneous to conclude from these figures that it is the rule that only children are affected by smallpox in Central Africa. The early descriptions of smallpox by the first explorers and the description by Theal of the epidemic in Cape Town in 1713 indicate that in these times adults were affected as frequently as children.

The history of smallpox in England provides an insight into the reason for the unusual age distribution in Central Africa. In Tudor and Stuart times smallpox was not confined to child-