SYPHILITIC DISEASE OF THE LONG BONES IN THE BANTU

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Although syphilitic lesions in bone have become increasingly rare in European communities, syphilis is still a common cause of bone pathology in the South African Bantu. Syphilis entirely accounts for, or complicates, 90 per cent of all bone lesions—apart from fractures—seen in the Baragwanath Hospital.

Syphilis is notorious for the diverse ways in which it may present itself, and an attempt is made here to illustrate by typical examples its usual manifestations in the bones of the Bantu. The disease is usually classified according to the age at which it manifests itself—that is, in infancy, in adolescence and in the adult—and according to whether it is congenital or acquired. In establishing a diagnosis of syphilis we have relied upon the following criteria in addition to a positive Wassermann or Eagle reaction. 1) Multiplicity of the bone lesions. 2) Typical radiographic appearances in other parts—for example, an associated gumma of the clavicle, or a "moth-eaten" appearance of the skull—besides the lesion in the long bones. 3) Rapid resolution of the lesion, or of the symptoms, in response to anti-syphilitic treatment, which in most cases consisted of penicillin 600,000 units daily. 4) When necessary, biopsy of the bone to exclude any other bone pathology.

Pain in the affected limb was the most common symptom, although often a lesion was discovered during routine radiography in other conditions. Pain always subsided rapidly with anti-syphilitic treatment. Sometimes there was also a marked improvement in the radiographic appearance of the bone lesion, especially with gummata and with the disease in infants.

In differentiating these lesions from other conditions, it might be asked how syphilis is distinguished from yaws; but yaws does not occur in the South African Bantu. It does not extend southwards beyond Northern Rhodesia (Hackett 1946) and it is unknown in the Union of South Africa, whence all these cases are drawn. Moreover yaws does not occur as a congenital affection, and the extensive scarring and pigmentation seen in yaws were not present in these cases. Finally in the large dermatological out-patient department of Baragwanath Hospital no skin manifestations of yaws have been seen. Goldmann and Smith (1943), in discussing the radiographic features of the two diseases, stated that it is unusual for syphilis to attack the bone and leave the periosteam unscathed. The opposite occurs in yaws, which regularly attacks the compact bone of the shaft and only affects the periosteam if the lesion is superficial. Helfet (1944) emphasised the acute onset of yaws in shafts of long bones, which simulates that of pyogenic osteomyelitis, with intense pain and swelling. For these reasons, in none of these cases did yaws cloud the diagnosis.

CONGENITAL SYPHILIS IN CHILDREN

The cases may be subdivided into early and late. Affection of only one bone is unlikely to be syphilitic. In children especially, it is the multiplicity of bony involvement which is characteristic of the disease.

Early changes—The most valuable and reliable finding in congenital syphilis—especially in early cases—is a metaphysitis (Figs. 1 to 5). This has been classified by some authors as an osteochondritis. It is often associated with periostitis. The response to treatment is striking (Fig. 2). When the epiphysis is markedly affected, the consequent hyperaemia and granulation-tissue formation encourage epiphysioly sis when the limb is subjected to stress (Figs. 6 to 8).
Case 1. Figure 1—Congenital syphilis affecting the long bones. Note diffuse periosteal reaction and metaphyseal changes. Figure 2—Condition after three weeks' treatment by penicillin. Marked improvement in metaphysical and periosteal reaction.

Case 2—Congenital syphilis affecting the long bones. Periosteal reaction and metaphysitis of femora and tibiae (Fig. 3) and of right humerus, radius and ulna (Fig. 4). Figure 5 shows early improvement in the condition of the right upper limb after two weeks' treatment by penicillin.
Case 3—Congenital syphilis affecting the long bones. The child was brought for advice on account of a palsy of the left upper limb. Radiographs showed diffuse syphilitic periostitis of humerus (Fig. 6) and femur on both sides. The child died from bronchopneumonia soon after admission. Figure 7 shows radiographs of right humerus and left femur removed at necropsy. Figure 8 is a photograph of the cut surface of the right humerus. Note displacement of the upper humeral epiphysis in radiographs and specimen.

Case 4—Rarefying osteitis affecting the left upper limb in child aged three months. Figure 9—Condition before treatment. Note gummatous changes in the proximal end of the radius and widespread changes in shafts of radius and ulna. Figure 10—Improvement two weeks after beginning penicillin treatment. Figure 11—Four months after completion of treatment, showing healing. The right upper limb was similarly affected and there were other widespread congenital syphilitic lesions.
Fig. 12
Case 5—Syphilitic periostitis, with "onion-peel" reaction at the periosteal surface of the left tibia.

Fig. 13
Case 6—Syphilitic periostitis simulating Fwing's tumour. Note also the central gumma and widened medullary cavity.

Fig. 14
Fig. 15
Fig. 16
Case 7—Syphilis and secondary infection of bone in child aged nine years. Note periostitis of right humerus (Fig. 14), new bone formation behind right femur which was the site of a mixed infection (Fig. 15), and epiphysitis of left tibia (Fig. 16).
Another manifestation of early congenital syphilitic bone disease is the mixture of rarefying and condensing osteitis that may resemble a pyogenic osteitis but differs from it in the rarity of sequestration and the rapid response to anti-syphilitic treatment (Figs. 9 to 11). **Late changes**—The principal late manifestations of congenital syphilis are periostitis and osteitis. Gummatous osteitis also occurs and at times makes the diagnosis difficult. Periostitis may present as typical “onion-peeling” associated with bone sclerosis, a possible source of confusion with Ewing’s tumour (Figs. 12 to 16). Biopsy may be necessary and the response to anti-syphilitic treatment establishes the diagnosis.

**ADULT MANIFESTATIONS**

Adult cases may be the result of late tertiary syphilis, congenital or acquired. The “lace” appearance of the periosteum which is seen beneath a syphilitic ulcer is not illustrated here because it is common to any chronic ulcer of the leg. The disease in the adult usually takes the form of osteitis or periostitis. Osteitis may be diffuse or localised. The diffuse form is mainly sclerosing and may eventually give rise to a picture resembling Paget’s disease (Fig. 17). The localised type is mainly gummatous and, although the lesions may break down, sequestrum formation is uncommon. **Periostitis** in the adult may be of three types: 1) Simple periosteal thickening. 2) Irregular “lace-work” type—this is less common, but said to be more characteristic. 3) Radiating spicules—usually associated with underlying gummata. This last type may easily be mistaken for an osteogenic sarcoma and biopsy may have to be undertaken to prove the diagnosis (Figs. 18 and 19). Brailsford (1948) stated that the differentiation can be made radiologically, the spicules in sarcoma being straighter and finer, but we have not found this helpful.
FRACTURES IN SYPHILITIC BONES

It has been said that bones affected by syphilis, especially by gummatous osteitis, are more brittle than normal bones and that healing is delayed after fracture. Illustrations are shown of two cases in which fractures occurred through bones affected by syphilis. In one patient fracture through the shaft of the humerus led to pseudarthrosis (Fig. 20). Despite the appearance of sequestrum formation at the site of the fracture there was no abscess or sinus. This patient, a woman, also had syphilitic osteitis of the skull. When seen recently, her disability was so slight that she refused treatment for the pseudarthrosis. The second patient sustained a fracture of the olecranon (Fig. 21) in a motor accident and, in spite of the fact that the bone was extensively affected by syphilis, union occurred without undue delay, and despite the fact that the olecranon was not sutured (Fig. 22). The fractures of syphilitic bones observed have been too few to allow assessment of the rate of healing.

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REFERENCES