A CASE OF OSTEOMYELITIS OF ALL THE SMALL BONES OF THE HANDS AND FEET

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Osteomyelitis is not a rare disease in infants, often involving multiple sites, particularly in the newborn, but no case parallel to that about to be described has been found after a careful search of the literature.

Green and Shannon (1936), reporting 95 cases of this disease in children under 2 years of age treated at the Children's Memorial Hospital, Boston, during the years 1925-36, showed that while the usual conception of staphylococcal bone infection is true in older children, the streptococcus is more commonly the causative organism in infants. In their series 63% of cases were due to streptococci. There was a striking relationship to antecedent infection, mainly respiratory (50%) and cutaneous (25%), and streptococcal osteomyelitis was particularly prevalent in cases with a history of recent respiratory infection. In pre-penicillin days mortality was high, being 21% overall in this group, but 45% in children under 6 months of age. The prognosis for sound bones, provided the patient survived the acute stage, was, however, shown to be good. Wade (1929) mentions the frequency of streptococcal and pneumococcal infections of bone in his series of infants under 3 months of age.

Infants have a natural method of decompression of the marrow space, as cortical bone is especially thin at the metaphysis, which is ordinarily the site of infection. Secondary abscesses under the periosteum are therefore common and sequestration is rare, but the proximity of the metaphyseal line to the capsule of most joints makes pyarthrosis a common complication. Even this complication appears to carry a good prognosis except when it occurs in the hip. Multiple sites of infection are mentioned by Einstein and Thomas (1946), Green and Shannon (1936) and Wade (1929), the last author describing infection in tarsal bones, but metatarsals and metacarpals seem rarely to be involved.

Case History

D.G. was admitted on October 15, 1949, at the age of 15 months with a history of fever, malaise and vomiting of two days' duration. She was the third child of healthy parents, born at full term. Her birth weight was 8 lb. 11 oz. She had been breast fed and had developed normally, but was not yet walking. Her previous history had been uneventful except for eczema in early infancy. The child's mother had had a sore throat a few weeks before the patient's admission, but the rest of the family were quite healthy.

Examination revealed a feverish, toxic child, sleeping when left undisturbed (temperature 101.5° F., pulse 136, respirations 26). The tonsils were enlarged and injected, but free from exudate and there was little swelling of the tonsillar glands. There was no stiffness of the neck and Kernig's sign was negative. Heart, lungs and abdomen were normal, but over the shins were several tender, indurated, purplish nodules. A similar lesion was seen near the right elbow, and a diagnosis was made of streptococcal tonsillitis with erythema nodosum. A throat swab and blood culture were taken and penicillin therapy started.

On the day after admission the patient's hands and feet were noticed to be swollen (Fig. 1) and on October 17 there was definite oedema of the extremities without puffiness of the face or pitting in the sacral region. The

Fig. 1.—The left hand three days after the onset.
Osteomyelitis of small bones of hands and feet

urine contained a trace of protein, but no cells or casts, and the systolic blood pressure was only 92 mm. The throat swab taken on admission was reported negative for haemolytic streptococci and a blood count showed only a slight leucocytosis: Hb. 70%; leucocytes 10,200 (polymorphs 71%, lymphocytes 26%, monocytes 3%). A tuberculin jelly test was negative. By October 19 the child was apyrexial, looked better, the hands and feet were less swollen and the erythematous blotches were fading. A radiograph of the extremities was normal. Penicillin therapy was stopped at this point, and salicylates given together with anti-histamine drugs, as a diagnosis of acute rheumatism was now entertained. However, by October 21 her temperature had again risen, this time to 103°F., and the following day the blood culture was reported positive for haemolytic streptococci. Blood was again taken for culture and penicillin therapy started again. The tip of the spleen became palpable on October 27 and blebs appeared on the swollen fingers and right foot on November 3 but the patient’s general condition improved slowly. A little bloodstained fluid aspirated from the subcuticular lesions was sterile on culture, but contained a moderate number of polymorphs. The second blood culture taken October 21 was reported positive for haemolytic streptococci group A on November 1. The extremities were radiographed again on November 4, and multiple areas of destruction were seen in all the phalanges and metacarpals of both hands. There was also a little periosteal proliferation and medullary translucency in several metatarsal bones with irregularity of terminal phalanges in the feet. A moderate leucocytosis (leucocytes 14,500, with 71% polymorphs) was now present. The blood Wassermann reaction was negative. On November 9 erosion of the distal half of the shaft of the left ulna was apparent radiologically, and patchy rarefaction of phalanges particularly at the metaphysis made the diagnosis of multiple foci of osteomyelitis incontrovertible (Fig. 2). Penicillin therapy was continued and from November 11 the child was apyrexial. Swelling of the hands and feet subsided gradually and by December 6 she was willing to move her hands a little. Antibiotic therapy was discontinued on December 22 after 32 days’ continuous treatment. By January 1, 1950, she was able to stand with support and the hands and feet were quite mobile, but the small bones felt enlarged. Radiographs showed new bone formation following rarefaction and fragmentation, but the os magnum, which had previously been visible in both hands, appeared to have been absorbed. No sequestra were seen. The child was discharged on January 2 and further observation in the out-patient department showed steady clinical and radiological improvement (Figs. 3 and 4). She started to walk in May, 1950, at 22 months, and was able to run and jump by 3 years, clumsily at first but quite nimbly later. By July, 1950, the carpal and phalangeal epiphyses were appearing and further improvement in the shafts of the phalanges was seen, although areas of translucence persisted causing a cystic appearance. This change had disappeared by March, 1952. Her subsequent progress has been normal, and she is now free of symptoms and signs.

Summary

A case of osteomyelitis involving all the small bones of hands and feet and one ulna in a child of 15 months is described. No similar case has been found in a search of the literature. With prolonged penicillin therapy, and without recourse to surgery, the patient recovered completely.

References


Fig. 2.—Radiograph five weeks after the onset, showing osteomyelitis of the ulna, metacarpals and phalanges.

Fig. 3.—Radiograph 20 weeks after the onset, showing carpal absorption with improvement in other bones.

Fig. 4.—Radiograph of hands showing restitution two years and five months after the onset.