STRESS FRACTURE OF A METATARSAL IN A YOUNG CHILD

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The following case is reported because of the early age of incidence.

Case Report

On July 23, 1946, a woman brought her child aged 4 years 9 months to hospital, stating that until the previous day the child had been well; she then complained of pain in her right foot on walking, and it was noticed that she limped. No history of trauma was elicited. There was nothing of note in the child's previous history; walking had never troubled her before.

On examination the right foot was mildly swollen but not bruised, and there was tenderness along the shaft of the second metatarsal. The appearance of the left foot was normal. She had a mild genu valgum. There was no clinical evidence of systemic disease. A skiagram (Fig. 1) showed: (1) A cuff

FIG. 1.—Skiagrams taken on day of admission, showing appearance of the second metatarsal shaft.

of fine new bone formation around the mid-shaft of the second metatarsal except for a small annular area of absence of bone in contact with the cortex. It appeared as if the bone was surrounded by a ring of tissue translucent to x rays.

FIG. 2.—Diagram of the second metatarsal shaft as seen in Fig. 1.

This appearance has been noted by Sayle Creer (personal communication) in a number of cases of stress fracture of the metatarsal, and he wonders if it masks a very small crack. (2) New subperiosteal bone formation in contact with the whole length of the metatarsal shaft except for the annular area described in (1).

In view of the patient's age a tentative diagnosis of periostitis, possibly tuberculous in origin, was made and a short leg unpadded plaster cast was applied.

On Aug. 30 the plaster was removed and the appearance of the child's foot was normal, the swelling and tenderness having disappeared. A skiagram revealed a clear fracture line across the metatarsal shaft with some separation of the fragments. The fracture showed good union. On Sept. 2, after a fortnight out of plaster, the foot appeared normal and a skiagram showed consolidation of the fracture with nothing to distinguish it from an ordinary "traumatic" fracture.

Discussion

The condition was regarded as one of stress fracture of the metatarsal on the following grounds: (1) The sudden onset of pain on walking without previous trauma. (2) Swelling of the foot (but no bruising) and tenderness of the affected metatarsal shaft. (3) X-ray appearances: the solution of continuity of the shaft and the consolidation of the fracture seen on Aug. 30, and the initial annular area of absence of bone in contact with the metatarsal shaft surrounded by a cuff of new bone. No cortical "nick" or hair-line fissure was seen: both were suggested as criteria for diagnosis by Hartley (1943), but as the skiagram on Aug. 30 showed a fracture line it is probable that the hair-line fissure was visible at some earlier stage. There is little doubt that had there been no displacement of the fragments the final skiagram would have shown complete restoration to normal architecture—said to be characteristic of "march fracture." (4) It occurred as a single lesion in the commonest bone affected by stress fracture; the other bones showed no lesion, nor was there evidence of general bone disease. (5) There was no evidence of systemic disease. No previous report of a case of stress fracture of a metatarsal occurring at such an early age was discovered in the literature. Several cases of stress fracture of the tibial shaft have been recorded in young children (Hartley, 1942); and Roberts and Vogt (1939) reported a case in a child aged 4. Stress metatarsal fractures have their maximal incidence in adolescents and young men, particularly soldiers—the incidence being so great in soldiers that the condition has been described as an occupational disease associated with military training.

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Medical Memoranda

Prevention of Peritoneal Adhesions by Transplantation of Amnion

Various procedures have been suggested to prevent adhesions following repeated laparotomy. The main object is to secure normal peristalsis. Glinn, Hoehne, and other authors recommended the intraperitoneal administration of soft paraffin and similar substances; for a time camphor was employed. It was established, however, that the mixture of fats and chemical compounds was noxious. Some workers, believing adhesions to be due to the absence of fibrinolytic ferments, suggested administering Pregel's pepsin solution or "leucoferment." Mayert and Feldmann tried to prevent adhesions by air insufflation. All these procedures have been criticized.

A case is reported here in which defective peritoneum has been replaced by sterile amnion to prevent new adhesions. For this operation only those cases should be considered in which deficiencies of the peritoneum, with severe adhesions, cannot be repaired by the older procedures because they are so extensive and deep that the body itself is incapable of repair. The transplantation of amnion is intended to provide a moist gliding surface ensuring natural bowel movements. Four suitable patients have been found in the course of four years whose condition necessitated the operation.

Though the problem of adhesion formation has been clarified, there is no reliable method of prevention or treatment. It has, however, been shown that besides asepsis, control of bleeding, and delicate manipulation of the tissues, the replacement of peritoneal defects is the most important factor in prevention. We believe that sterile amnion fulfils these requirements. Transplantation of sterile amnion in the course of gynaecological operations was performed in this country