lished. No accessory spleen was felt. Splenectomy was performed. The spleen, which was of normal shape, weighed 280 g. The patient made an uninterrupted recovery.

My thanks are due to Dr. P. A. T. Sneath, late Director of Medical Services, Tanganyika, for permission to publish this article.

C. L. HALL, B.M., B.Ch.,
Medical Officer, Tanganyika.

REFERENCES

- Abell, I. (1933). *Ann. Surg.*, 98, 722.
Emmett, J. M., and Dreyfuss, M. L. (1943). *Ibid.*, 117, 754.
Truesdale, P. E., and Freedman, D. (1938). *Surgery*, 4, 700.

Trauma and Fibrosarcoma in the Foot

Fibrosarcoma in the extremities is uncommon: its occurrence in the foot is rare. Of the 24 cases of fibrosarcoma in the extremities collected by Bick (1938), only three were in the foot. In the present case the history of trauma is noteworthy.

CASE REPORT

A married woman aged 36 first attended hospital in April, 1946, complaining of pain and swelling of the first right toe, which had developed nine months previously, shortly after her husband had trodden on this foot. She also gave a history of having dropped a file on the foot two years earlier. Inspection showed the shape of the foot to be good, but there was a cystic swelling on the fibular side of the first toe, just distal to the metatarso-phalangeal joint. Movements of the joint were limited by pain. An x-ray film showed cystic spaces in the head of the first metatarsal, a satisfactory joint space, and complete degeneration of the head (see illustration). The patient was booked for

Radiograph of the fibrosarcoma.

"removal of the ganglion between the first and second right toes, with constructive removal of the head of the first metatarsal."

One year later she attended hospital complaining of pain and swelling. This increased gradually, and in November, 1947—19 months after her first attendance—she reported that the pain had become "suddenly acutely severe," especially on the plantar aspect of the first toe.

The swelling had markedly increased only in the preceding two or three weeks. She was admitted to hospital.

On examination the first right metatarso-phalangeal joint was swollen and there was a small cystic swelling in the first space, which was not fixed superficially, was probably not fixed to deep structures, and could be moved transversely only. It was tender to the touch, but not painful. The swelling appeared to extend along the first metatarsal. All movements at the metatarso-phalangeal joint were limited by severe pain. The blood Wassermann reaction was negative.

At operation a cystic swelling was found in the first space, white, tense, and elliptical—apparently of gelatinous consistence. It extended proximally along the fibular aspect of the first metatarsal and deeply into the foot. Only after removal of a considerable quantity was the extent of invasion appreciated, and no further exploration was undertaken. The capsule of the metatarso-phalangeal joint was completely absent, and the head of the metatarsal, while quite firm on its articular margin and apparently on its plantar aspect, showed trabeculation which produced cystic spaces. The mass of material seemed to be of capsular origin, and in

appearance suggested myxoedematous degeneration. Part of the soft paper-like proximal phalanx was removed. The incision was closed, there having been much bleeding into the foot, and a firm bandage was applied. The report on the material from the foot was: "The main portion of the tissue is fibrous, but there are also areas with more or less densely packed small round or spindle cells advancing into the lymph spaces of the fibrous tissue. The appearance is that of a fibrosarcoma." Radiographs of spine and chest showed no metastases.

In view of the state of the foot revealed by operation, and the pathologist's report, an amputation was performed 7 in. (17.8 cm.) below the knee, and the patient was discharged a month later, apparently in good health, after measurement for an artificial limb. When last heard of, 45 months after operation, the patient was in good health.

COMMENT

It is accepted that the important predisposing factor in the development of carcinoma is chronic irritation, be it mechanical, repetitive, or chemical; and, despite one's acquaintance with the large number of injuries which do not end up with malignant change, sooner or later one is haunted by the part trauma appears to play in the development of sarcoma. In assessing the part played by trauma, it is helpful to bear in mind Walker's (1941) table: (1) Injury may cause disease. (2) Injury may precipitate disease. (3) Injury may aggravate disease. (4) Disease may promote injury (Ewing's "traumatic determinism"). (5) Injury may reveal disease. (6) The association may be pure coincidence. (7) In post-traumatic debility and invalidism sundry maladies and degenerations may be installed.

Sarcomata appear to follow a single injury, not always severe, and the features injury, persistent swelling, and/or haematomata, in the absence of fracture, are commonly found. The malignant degeneration usually takes place in the period of body growth, but not always. The striking feature to my mind is the story of an injury—to testicle, skull, limb, for example—causing temporary discomfort, which appears to begin to subside under whatever local treatment is given, but which, usually after a few weeks, rapidly becomes accentuated and the swelling more pronounced. Radical treatment at this stage does not usually succeed in preventing metastatic deposits. The absence of metastases is regarded as this particular patient's great and rare good fortune. The sequence of events, related so precisely by her, warrants the assumption that trauma played the decisive part in the development of her sarcoma.

Repair takes place by means of cell proliferation and by factors restoring function—presumably factors related to the part's function, affecting the differentiation of young cells—and the rate must similarly be controlled. Shaw (1935) notes that young cells of the proliferative stage of repair obtain their energy by glycolysis, whereas the differentiated cells obtain it by oxygenation from the blood stream. Thus, the early undifferentiated cell of repair resembles the cancerous growth in this respect. The view is advanced that, where function is unimpaired, stimulus to proliferation may result in malignant change—for example, (a) carcinomatous changes occurring in the sinus of chronic osteomyelitis; and (b) neoplastic change due to the long exposure of apparently healthy skin to tar preparations used in the repair of ulcers and to heal skin conditions.

As the character changes develop in only a minority of cases it must be assumed that other factors are also involved.

I wish to thank Mr. Rocyn Jones, of the Royal National Orthopaedic Hospital, London, for permission to publish this case, and Mr. David Trevor for his helpfulness and advice.

E. SILVERSTONE, L.R.C.P.&S.Ed.

REFERENCES

- Bick, E. M. (1938). *Arch. Surg., Chicago*, 37, 973.
Shaw, J. J. M. (1935). *Lancet*, 1, 860.
Walker, G. F. (1941). *British Medical Journal*, 1, 660.