treatment of resistant skin diseases by specialists in dermatology. It would seem that sex problems and the method of immunization require additional stress either in student days or in postgraduate courses.

A number of questions relate to the treatment of conditions not normally seen in the wards of teaching hospitals—e.g., epilepsy, skin conditions, and Parkinson's disease. Hospital experience in the treatment of these conditions is often to be obtained only as a house-physician or house-surgeon in out-patient departments. It may be that the student does not see enough of the routine work in out-patient departments, but rather looks upon the departments as places where typical clinical signs are demonstrated and where differential diagnosis is learnt.

Questions may indicate excessive interest in certain aspects of medicine, but would it be correct to assume the converse? It is probably true to say that the average doctor takes little interest in statistics. "General preventive measures against disease" (46) is a small group compared with "treatment of disease" (904). Is this as it should be? Or should medical schools stimulate a greater interest in the prevention of disease and the maintenance of positive health?

There is no doubt that large numbers of the questions are attempts by questioners to keep pace with the rapid growth of medical knowledge and methods. This is exemplified by the interest shown in sulphonamides and penicillin, which have come into their own during the period under review. Such questions reveal the need for postgraduate refresher courses.

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BRODIE'S ABSCESS OF THE TIBIA ITS TREATMENT BY SURGERY, PENICILLIN, AND SULPHADIAZINE

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Brodie's abscess was first described by Sir Benjamin Brodie in 1824. According to Muir it is "a local abscess of chronic nature usually situated in the metaphysis of a long bone. It is, as a rule, surrounded by dense bone and may give rise to external swelling. The contents of the space may be pus, but in very chronic cases are often a clear fluid, which may be sterile."

In all, some 342 cases of Brodie's abscess have appeared in the literature. In 1906 Thompson described an abscess of the lower end of the tibia. This specimen is preserved in the Royal College of Surgeons in Edinburgh. The abscess has a capacity of some 500 ml., and the patient, a sailor, was reputed to drain the abscess from time to time by removing a wooden plug he kept in the sinus. It is recorded that he led an extremely active life. Thompson also reported 161 cases from the literature. In 1924 Henderson and Simon reported 13 cases from the literature. In 1928 Piquet and Cynau described 9 cases of Brodie's abscess. In 1938 Wagner and Hanby reported 12 cases. In 1945 Downey and Simon, in the United States, described 2 cases and reviewed most of the above.

Site.—From the above cases the most common site for Brodie's abscess would appear to be shared equally by the

upper and lower end of the tibia. The next site, which is only half as common, is the lower end of the femur. The third commonest site is the humerus (position not stated), followed by the upper end of the femur, the middle of the tibia, and the radius (position not stated).

Aetiology

Sex.—Brodie's abscess occurs almost twice as often in males as in females, and in about 90% of the cases in which the age was mentioned it occurred below the age of 40.

Trauma.—The fact that males are as a rule subject to a greater amount of trauma than females is significant. It will also be noticed that Brodie's abscess occurs during the age period of greatest physical activity. It also occurs commonly after compound comminuted fractures.

Osteomyelitis.—Brodie's abscess often follows acute osteomyelitis. In his series of 145 cases Thompson elicited a history of acute osteomyelitis in 122. It is noticeable that Brodie's abscess frequently follows an acute osteomyelitis which has passed into the chronic stage. This is becoming increasingly less common since the advent of chemotherapy and penicillin therapy.

Acute Infections.—Brodie's abscess has been seen after acute infections—principally typhoid and paratyphoid fevers—otitis media, staphylococcal skin infections, and abscesses.

Case History

J. D., a miner aged 62, attended the out-patient department of Ayr County Hospital on March 19, 1947. He had been complaining for the past six weeks of an intense, continuous, deep-seated pain situated in the lower end of the left tibia. The pain, which was much worse at night, had gradually got more severe over these six weeks, and when seen the patient complained of feeling feverish at night, with marked malaise, anorexia, and vomiting. Two weeks before coming to hospital the left ankle began to swell, and the skin became red, glazed, and distended over both malleoli. These swellings were extremely painful, and the pain was continuous in character.

There was a history of a compound fracture of the lower third of the left tibia and fibula some thirteen years previously. This fracture had united, but there was considerable thickening of both the tibia and fibula at the junction of the middle and lower thirds.

On examination gross swelling of the left ankle was seen, particularly over both malleoli, where two large abscesses were pointing; these were approximately 2½ in. (6.25 cm.) in diameter, and appeared to be about to rupture. The whole swelling was extremely tender on palpation, particularly over the lower anterior aspect of the tibia. The slightest movement of the ankle-joint caused excruciating pain. Lymphangitis was pronounced up to the level of the knee, and both the popliteal and the superficial inguinal groups of glands were enlarged and tender.

Radiographic examination revealed an egg-shaped cavity of the lower third of the tibia, about 2½ in. long vertically, by about 1 in. (2.5 cm.) in breadth, and 1 in. in depth. There was a small bead-like pocket connecting with the lower aspect of the cavity; this was about ¼ in. (0.6 cm.) in diameter. The whole was surrounded by dense sclerotic bone. A diagnosis of Brodie's abscess was made. The white-cell count was 22,000 per c.mm. (90% polymorphonuclear leucocytes). The erythrocyte sedimentation rate was 20 mm. and 45 mm. at one and two hours, respectively.

Treatment

At first the main object was to deal effectively with the superficial abscesses and to prevent their rupture and the formation of subsequent sinuses, as this would impede any operative treatment of the bone abscess itself. The superficial abscesses were therefore aspirated on March 19 by means of a wide-bore needle which was inserted through healthy skin on either side, and 35 ml. of thick yellow pus was taken from the medial abscess and 30 ml. of similar-looking pus from the lateral abscess. Sodium penicillin in a dosage of 50 000 i.u. was injected into each abscess after aspiration. The needles were

then removed and the puncture wounds were sealed with collodium flexile. The ankle was lightly bandaged. The patient stated that the pain was greatly relieved.

Bacteriological examination revealed numerous Gram-positive cocci and pus cells. On culture profuse colonies of *Staphylococcus aureus pyogenes* were obtained. These were found to be penicillin-sensitive.

Aspiration of the abscesses was repeated, and the introduction of similar amounts of penicillin was carried out on March 21, 23, and 24. By the 25th the superficial abscesses were completely healed except for slight discoloration of the skin and the needle-puncture marks. In addition to the above local treatment the patient had a course of sulphadiazine (2 g. followed by 1 g. four-hourly) together with three-hourly intramuscular injections of sodium penicillin (20,000 i.u.); this parenteral treatment was started on March 19.

On March 25 the administration of sulphadiazine was discontinued, the patient having had 30 g. The three-hourly administration of sodium penicillin was now changed to penicillin in beeswax (Glaxo), as the patient was rather apprehensive regarding continuous three-hourly injections. The dosage was changed to 60,000 i.u. given in two 12-hourly doses.

Operation

On March 28, under nitrous oxide, oxygen, and "trilene" anaesthesia, a 6-in. (15-cm.) curved incision was made vertically from the junction of the middle and lower thirds on the medial side of the leg to within 1/2 in. (1.25 cm.) above and behind the medial malleolus. The incision was made through healthy skin down to bone. The soft tissues were retracted and the tibia explored over its medial aspect; the extent of the abscess was gauged and the bone saucerized over this area by means of a gouge. All bone chips were carefully preserved in warm normal saline. The lining membrane of the abscess cavity was soon exposed; this was found to be dark grey in colour. After exposure of the membrane all further bone chips removed were discarded. The abscess was now fully laid open along its whole length, and the grey pus which formed its contents was removed and retained for examination. The lining membrane was carefully curetted with a Volkmann's spoon and all debris removed. The cavity was then packed with the previously preserved bone chips.

An ordinary wide-bore intravenous needle was introduced into the cavity, the base of the needle being sutured to the wound edges, which were closed by means of interrupted silk-worm-gut sutures. The dressing was arranged so that the base of the needle would protrude through the dressing without interference with the wound itself, thereby enabling three-hourly injections of penicillin to be carried out. Bacteriological examination of the pus from the bone abscess revealed numerous Gram-positive cocci, which on culture gave profuse colonies of *Staph. aureus pyogenes*.

Subsequent Progress

The patient's condition after operation was extremely good. Sodium penicillin (30,000 i.u. three-hourly) was injected into the bone cavity. This was painful, but the pain passed off after two days. At first there was a tendency for the needle to become blocked with clotted blood, but this was countered by inserting a sterilized stylet before the injection of penicillin. The patient continued to have 60,000 i.u. of penicillin in beeswax twice daily by the intramuscular route. All local pain disappeared after three days, the patient felt extremely well, and he moved his ankle-joint freely. On April 4 penicillin was discontinued. The needle was removed, also alternate sutures. The wound was satisfactory. On April 7 all sutures were removed; the wound appeared to be very healthy, and there was no evidence of wound infection.

Radiological examination on April 9 and 15 showed considerable and increasing bony union between the tibia and the bone chips. The patient was discharged from hospital on April 19, feeling in the best of health and walking with the aid of two sticks. He reported to the orthopaedic clinic on May 7, walking with a slight limp and using only one stick. Radiological examination showed further bony union between the chips and the tibia. The abscess cavity was being gradually obliterated by new bone formation. The patient returned on June 6, and

was walking extremely well without a stick. He said that he had no discomfort in walking five miles and was keen to resume work. He was in excellent health and had absolutely no disability. He was advised to report in a month. On July 7 radiological examination revealed almost complete obliteration of the abscess cavity. The patient said that he was in perfect health and thought of returning to work. He could now walk an unlimited distance and had no limp. Ankle movements were full and painless.

Dosages of Sulphadiazine and Penicillin

1. Sulphadiazine (March 19-24), 30 g.
2. Penicillin (sodium): (a) Locally to superficial abscesses (March 19-24), 400,000 i.u. (b) Intramuscular (March 19-24), 800,000 i.u. (c) Direct to abscess (March 28-April 4), 1,680,000 i.u.
3. Penicillin (beeswax) (March 25-April 4), 1,200,000 i.u. Total penicillin administered, 4,080,000 i.u.

Summary and Conclusions

A successful method of dealing with Brodie's abscess of the tibia by means of surgery, sulphonamides, and penicillin is detailed.

Cavities in the shaft of the tibia are notoriously difficult to deal with if an aesthetically satisfactory result is to be obtained.

By the method suggested, obliteration of the bone cavity is secured, with first-intention healing of the wound and retention of the shape and symmetry of the limb.

Medical Memoranda

Folic Acid Therapy in Coeliac Disease

The following case of coeliac disease may be of interest because of the rare macrocytic anaemia present and its rapid response to folic acid therapy.

CASE HISTORY

The patient, a small girl of 10, was admitted to hospital on Aug. 21, 1947, with a history of vomiting and diarrhoea with loss of weight for the past three years. The motions were described as being large and white on occasion. She had been in hospital earlier in the year, and when she was discharged the stools were normal and she was gaining weight.

On admittance the child was apathetic and miserable. She was markedly anaemic and emaciated. The abdomen was protuberant, and the buttocks and thighs particularly were wasted. The motions were large, formed, pale, and offensive. A blood count on Aug. 21 showed: haemoglobin, 16%; red cells, 550,000 per c.mm.; colour index, 1.5; white cells, 5,000 per c.mm. Blood film: macrocytosis, anisocytosis, and poikilocytosis all pronounced; several megaloblasts and normoblasts present.

After treatment with 2 ml. of liver extract intramuscularly and two tablets (10 mg.) of folic acid ("folvyte") daily, combined with supplementary vitamins and but little dietetic restriction of fat, the haemoglobin rose to 27% in two days, and since then has risen steadily. There was also a steady gain in weight, as the following figures show.

Date	Haemoglobin	Weight
21/8/47 ..	16% ..	2 st. 12½ lb. (18.48 kg.)
23/8/47 ..	27% ..	—
28/8/47 ..	35% ..	—
1/9/47 ..	37% ..	2 st. 13 lb. (18.59 kg.)
8/9/47 ..	40% ..	3 st. 1½ lb. (19.73 kg.)
15/9/47 ..	49% ..	3 st. 2 lb. (19.96 kg.)
23/9/47 ..	58% ..	3 st. 5 lb. (21.32 kg.)
2/10/47 ..	60% ..	3 st. 6½ lb. (22 kg.)
10/10/47 ..	68% ..	3 st. 7½ lb. (22.45 kg.)
20/10/47 ..	74% ..	3 st. 7½ lb. (22.45 kg.)
4/11/47 ..	80% ..	3 st. 8 lb. (22.68 kg.)

The stools are normal in appearance and number, the abdominal distension has disappeared, and the patient's appearance is that of a healthy normal child.

A megalocytic hyperchromic type of anaemia is rare in coeliac disease, but has been noted to occur in cases that continue into adult life. In these cases the anaemia responds rapidly to folic acid treatment as it does in the sprue syndrome in adults.

My thanks are due to Dr. T. A. Kean for permission to publish this case.

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