Blood-sugar Level (mg. per 100 ml.)

At	After Administration of 50 g. Glucose (Fasting, 210 mg.)	After 60 g. Glucose Orally and 10 units Insulin Intravenously (Fasting, 299 mg.)
$\frac{1}{2}$ hour	246	255
1 hour	275	290
1½ hours	250	310
2 "	236	294
2½ "	222	290

the right transverse process of L.5. The bones of the upper limbs were small. There were localized periosteal thickenings and deformity of the lower end of the right radius. The bones of the lower limbs were small and rarefied and there was bowing of the tibiae and fibulae. The tibial vessels were calcified. A skiagram of the pituitary fossa did not show any definite enlargement. Calcification was seen on its floor, extending anteriorly, and there was some erosion of the base posteriorly. The films were shown to Dr. J. R. Gilmour, who suggested a diagnosis of hyperostosis frontalis interna, and this was confirmed by a lateral skiagram of the whole skull (Plate, Fig. 2). This shows hyperostosis on the internal surface of the frontal bone without involvement of the outer table, large frontal sinuses, and over-pneumatization of the mastoid cells.

Insulin therapy was stopped and she was given a diet of 10½ oz. (297 g.) of meat or fish supplemented with green vegetables. On this diet there was considerable reduction in the amount of sugar excreted. The blood-sugar level three-quarters of an hour after a midday meal was 160 mg. per 100 ml., and at three and a quarter hours was 163 mg. The polyuria was largely controlled. She lost 9 lb. (4 kg.) in a month on this diet.

Discussion

The congenital deformities of her limbs are those of amyoplasia congenita. Apart from headaches, which she has had as long as she can remember, the other main features of her condition point to a pituitary or a pituitary-hypothalamic disturbance starting at the age of 19. These features are a large fat ruddy face, hirsuties, a buffalo distribution of fat, greasy skin, acne and boils, a history of irregular menstruation, insulin-resistant diabetes (detected at the age of 52), hypertension, and a haemoglobin of 116%. The combination is suggestive of Cushing's syndrome but lacks some of its important features. The lateral radiographs of the skull establish the diagnosis of hyperostosis frontalis interna; in a few cases of this condition calcification has been seen, as in this patient, in the sella turcica. It is now generally accepted that this cranial dysplasia is a manifestation of pituitary dysfunction (Knies and Le Fever, 1941). In the description and classification of a large series of pituitary cranial dysplasias by Mortimer, Levene, and Rowe (1937) there are references to hyperostosis frontalis interna, though they do not use the term themselves. Both basophilic adenomatous masses and eosinophil adenomata have been found at necropsy in the pituitary glands of some of these cases. The low excretion of 17-keto-steroids is probably accounted for by the patient's age: Frazer *et al.* (1941) found that the daily output was low in the elderly. Henschen (1936) has suggested that in hyperostosis frontalis interna a hereditary influence determines the frontal localization of the bony changes, and it may be that there is in this case a common genetic factor responsible for both the limb deformities and the cranial dysplasia.

I wish to thank Dr. Phillips, Medical Superintendent, Southmead Hospital, Bristol, for permission to publish this case, and Dr. A. C. Crooke and Dr. J. R. Gilmour for their valuable advice.

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TUBERCULOSIS OF THE GREAT TROCHANTER

BY

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[WITH PHOTOGRAPHIC PLATE]

Tuberculosis of the great trochanter with involvement of the overlying bursa was originally described by Teale in 1870. Since that time references to this condition in the literature had been meagre until Meyerding and Mroz (1933) reported nineteen cases. The present series comprises twelve cases treated in Liverpool and Wrightington during the last fifteen years.

Incidence

None of the previous papers on this subject have given any indication as to its frequency. In this collection of case histories I have found the incidence to be just under 2 per 1,000 cases of tuberculosis. It has been stated by Clapton (1919) that it does not occur in children, but in this series the youngest patient was 7 years old and there was also one patient of 14 years. The average age of the remaining patients was 28 years, which is comparable with the average of 35 years quoted by Meyerding and Mroz. Nevertheless, as the total number of cases recorded in the literature is only 41 this figure cannot be considered large enough to indicate a definite age period.

Aetiology

Two factors are of importance. The first is the question of trauma: the superficial position of the great trochanter makes it peculiarly liable to injury, and severe blows on this bony prominence are an everyday occurrence. However, a history that recent trauma was followed by swelling or pain associated with tuberculosis of the great trochanter does not immediately suggest this as the principal aetiological factor, since the underlying disease may have already been present for some time, and the trauma may merely have been responsible for drawing the patient's attention to it. Nevertheless, three of the patients in the present series gave a history of considerable trauma to the great trochanter, although two of them remembered having had occasional aching pains referable to the hip for several months before the accident. Secondly, a considerable proportion of these patients were suffering, or had suffered, from tuberculosis in other situations. In the series described by Meyerding and Mroz (1933) 73% had other tuberculous lesions. In the present series, however, only five patients out of twelve (42%) had any other demonstrable tuberculous lesion. The site of this lesion varied: two patients had pulmonary tuberculosis, one had cervical adenitis, one a retropharyngeal abscess without a bony focus, one tuberculous arthritis of the knee, and one tuberculosis of the sacro-iliac joint of the opposite side.

Symptoms and Signs

This condition may present in two ways: usually the patients notice a swelling of increasing size over the great trochanter, or they may complain of pain or aching of a mild type over the outer side of the thigh, apparently referred to either hip or knee. On examination a fluctuating swelling of varying size is usually found, covering the outer aspect of the greater trochanter, and extending backwards over the buttock and downwards for a varying distance (in two cases it reached the level of the lower

femoral epiphysis). The movements of the hip-joint are unaffected, but passive adduction is often accompanied by considerable pain. Six of the cases, when first seen, had old sinuses leading down to the bursa and bony tissue of the great trochanter.

The time interval between the onset of symptoms and the beginning of surgical treatment varied, the longest being two and a half years and the shortest three months. The average time was eighteen months. This differs considerably from the average of eleven and a half years given by Meyerding and Mroz, but the fact that one of their patients had had symptoms for forty years may have considerably influenced this figure.

Operative specimens and pus from ten of the patients in the present series were submitted for pathological and bacteriological examination. The tuberculous nature of the lesion was proved by histological examination or guinea-pig inoculation on seven occasions.

Radiological Findings

Clapton (1919), Peabody (1921), and Keith (1922) have expressed the opinion that this condition usually arises in the bone. Keith has further suggested that it is primarily a tuberculous epiphysitis of the great trochanter, and is thus comparable to tuberculous epiphysitis in other situations. Other writers on this subject have expressed no opinion as to the original site of the infection. The changes revealed radiologically, however, show two distinct types of lesion. First and commonest is erosion of the periphery of the great trochanter, and secondly (one case) there is the encysted form which arises in the medulla of the great trochanter. Five of the patients had no bony change visible on radiological examination, and, moreover, they had another factor in common: they were the only patients (except the one with the encysted form) who had not yet developed sinuses, and were therefore free from secondary infection. All the other patients both showed erosion of bone and also had sinuses.

It may be suggested at this point that the bone changes were late in appearing, but two of these patients had noticed the presence of the cold abscess for over two years before seeking advice, and it is reasonable to expect that if the bone had been affected there would have been radiological changes at the end of that period. On the other hand, three of the patients, who were found to have considerable erosion of bone, had had their abscesses incised by their local practitioner six to eight weeks before they were x-rayed, and the period of their symptoms did not exceed one year.

Two of the cases were particularly instructive. The first was a woman aged 25 years, who had noticed a fluctuant swelling for a year before seeking advice, when she was x-rayed but no bony change was demonstrated. The abscess was then opened and its interior curetted, and at the same time it was reported that there was no sign of involvement of the greater trochanter. The treatment was unsuccessful and a sinus developed. A radiograph six weeks later showed early erosion of the greater trochanter. The second case was a girl of 14 who had complained of mild pain in the right thigh for fifteen months. Recently she had become aware of a swelling over the outer aspect of the thigh. On radiological examination there was no evidence of bony erosion, and she was treated by aspiration of the abscess and rest in bed. The material thus removed was thick yellow pus, and proved positive for tuberculosis by guinea-pig inoculation. The treatment was continued for about a year, during which time repeated radiological examinations failed to show any evidence of erosion of bone. Twelve months after treatment was started a sinus developed, and a month later x-ray examination showed considerable bony erosion.

Two other general factors militate against the theory that the primary lesion is always situated in the bony tissue: (1) It is extremely unusual for extra-articular tuberculosis to start by erosion of the cortical surface of the bone substance from without, and there is no comparable lesion described in any other situation. (2) In all the radiographs of peripheral erosion there is definite evidence of sclerosis, and this is undoubtedly due to the secondary infection which is present.

I would therefore suggest, on these grounds, that where there is radiological evidence of peripheral erosion in tuberculosis of the great trochanter the bony lesion is secondary to tuberculous infection of the trochanteric bursa, and begins only after secondary infection has taken place. (See Plate.)

The Encysted Form

Only one patient showed this form of the complaint; she was a girl of 12 who had complained of pain in her right hip for a period of eighteen months. On x-ray examination a small area of diminished calcification in the centre of the great trochanter was seen. There was no limitation of movement in her hip-joint, and she was otherwise in good health. After a period of rest in bed the condition failed to improve, and eventually the trochanter was excised. The wound healed by first intention. The specimen of bone removed was submitted for histological examination, and it was reported that the necrotic area was typical of tuberculous osteomyelitis. The x-ray appearances in this case were similar to those of tuberculous osteomyelitis in other situations, and at no period did the patient show any evidence of involvement of the overlying bursa. I would suggest, therefore, that this was the only case in this series where the infection started primarily in the bone.

Treatment

1. Drainage of the abscess was practised in three of the cases, and was done before the nature of the lesion had been ascertained. None of these wounds healed, and extensive sinuses formed. Radiologically there was considerable erosion of the great trochanter, and these patients were treated by excision at a later date.

2. Three of the patients were treated by repeated aspiration and rest in bed—in two cases on an abduction frame. Sinuses formed within a year of starting treatment, and the patients were later treated by excision of the bursa and trochanter.

3. Incision and curettage of the walls of the abscess was done in five of the patients in whom there were no sinuses or signs of involvement of bone. In two cases the wounds healed by first intention, in another two the healing was delayed from six to twelve weeks, and, although there was minimal serous discharge, the remaining patient developed a persistent sinus with involvement of bone, and was eventually treated by excision.

4. Seven patients were treated by excision of the bursa and of as much of the trochanter as was involved. This was practised also on one case of tuberculous osteomyelitis of the trochanter. In two of these patients the wound healed by first intention; in the remaining six cases sinuses persisted, but all were healed within seven months from the date of operation.

Conclusions

1. Tuberculosis may originate either in the great trochanter or, more commonly, in the overlying bursa.

2. In tuberculosis of the great trochanter bursa, erosion of the bone does not usually occur until secondary infection has taken place.

3. The best treatment of tuberculous bursitis is probably early and adequate excision.

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ACUTE INTERSTITIAL POLYMYOSITIS TREATED WITH PENICILLIN

BY

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[WITH PHOTOGRAVURE PLATE]

An important feature of the following case of what is a relatively rare condition was the good response to penicillin, altering the course of the disease from a moribund state to complete recovery.

Case History

The patient, a peasant woman aged 42, was admitted to hospital on May 28, 1946. She had been taken ill rather suddenly on May 19, when she had a rigor and felt some pain in her right arm and left leg. The following day all her limbs were painful, but they did not swell until the third day of illness, when all limbs gradually became swollen. Her face remained unaffected. She felt very weak and perspired freely. The temperature was not taken. On the fifth day her condition became worse, the pain increased, and she felt "much heavier." She called in a doctor, who found her temperature to be 100.4° F. (38° C.). He gave her some medicine, but her condition did not improve. On the tenth day of her illness she was transferred to our hospital.

On examination all her limbs were greatly enlarged; the skin was tense and glistening; and active and passive movements were very restricted. The muscles appeared "hypertrophied," were tender, and some of them were transformed into large tumour-like lumps, especially the upper third of the right sternocleidomastoid, both biceps, both brachioradials, and the upper parts of the abdominal recti. This gave, in the epigastric regions, the impression of an enlarged spleen and liver. The abdominal and patellar reflexes were missing, but there were no pathological reflexes. The lungs, apart from a few rhonchi, were normal. The respirations were 26 and the pulse (120) was soft and regular. The heart was moderately dilated, the action regular, and the heart sounds clear; the blood pressure was 110/80 mm. Hg. The evening temperature was 102° F. (38.9° C.), and was of intermittent character.

Laboratory Findings.—Urine: acid, specific gravity 1031, trace of albumin; a few leucocytes, erythrocytes, and epithelial cells were seen in the deposit. A blood count showed: haemoglobin (Sahli), 83%; red cells, 4,240,000; white cells, 5,200 (segmented neutrophils, 84%; unsegmented neutrophils (*Stabzellen*), 2%; monocytes, 2%; lymphocytes, 2%; eosinophils, 10%). The eosinophils varied from 5 to 16% in different counts. The Wassermann reaction and Widal test were negative, the B.S.R. was 15 mm. (Westergren), and the residual nitrogen, 38 mg. per 100 ml. Blood cultures, electrocardiography, and x-ray examination were negative.

Treatment with "novurit," vitamin B, "neosalvarsan," and theobromine-caffeine had no effect. The patient remembered

that she had eaten pork meat and pork sausages before her illness, and, although the number of eosinophils was not high enough for trichiniasis and there were no swellings of the face and eyelids, a tentative diagnosis of trichiniasis was made, and a biopsy specimen was taken from the most swollen part of the right sternocleidomastoid.

Histology before Treatment with Penicillin (Plate, Fig. 1).—A pale-red soft piece of muscle the size of a large bean was imbedded in paraffin and stained with haematoxylin-eosin and van Gieson. As the photomicrograph shows, the normal muscle tissue was largely replaced by a very cellular inflammatory infiltrate consisting mainly of leucocytes, many of them eosinophils. The widely separated muscle fibres had partly lost their striation and had undergone waxy degeneration. Some appeared to have ruptured or been replaced by the inflammatory tissue. No trichinae were found in the sections examined, and the histological diagnosis was acute interstitial eosinophilic polymyositis. Cultures from the blood were negative, and as the biopsy material was put into formalin no culture could be attempted.

By now the patient's condition had become practically hopeless. On clinical grounds and theoretical consideration based upon the histological findings we decided to try a course of treatment with penicillin.

Treatment with Penicillin.—This was started on June 8, about the twenty-first day of illness. The patient was given 15,000 units of penicillin three-hourly, intramuscularly. On June 14, the sixth day of treatment, her temperature dropped to normal and remained so. The swellings were diminishing and her general condition already showed great improvement. After receiving 1,500,000 units of penicillin she felt so well that she was discharged on June 21. She has been feeling well and healthy since.

Before her discharge a second biopsy was performed, and an impressive change was seen in the microscopical picture (Plate, Fig. 2). The inflammatory infiltrate had largely gone and most muscle fibres appeared normal. The number of leucocytes, especially the eosinophils, had considerably decreased and there were mostly mononuclear cells in the specimen. Thus the histological findings testify to the effect of penicillin in this case. No further biopsy could be undertaken.

Discussion

Acute polymyositis Wagner is a rare condition affecting the muscles of the limbs and buttocks, which with the surrounding soft parts swell acutely. The general condition is disturbed, pain is a dominating symptom, and fever is present. According to Mayesima it is probably of septic origin. Acute polymyositis has been observed after influenza, tonsillitis, rheumatoid arthritis, meningococcal infection, suppurative processes such as tonsillar abscesses, etc., and also in epidemic form. Landsteiner found a streptococcus identified as *Str. polymorphus*.

In severe cases the disease often runs a short course, ending in weeks or months by death from asphyxia or aspiration pneumonia. Chronic cases may last one or two years. The disease resembles clinical trichiniasis, and was called pseudotrachiniasis by Hepp.

It can sometimes take a milder and more favourable course. In my case the patient's condition was rapidly deteriorating and looked clinically hopeless when treatment with penicillin was decided upon. Although one case is not sufficient proof, the quick recovery after treatment clearly indicates the role of penicillin in the treatment of acute polymyositis. The histological findings before and after treatment with penicillin give objective evidence of its effect in this case. Five months after her illness the patient was well and working. Her condition was perfect when last seen in May, 1947.

ADDENDUM.—Since this paper was written I have read an interesting report by M. Roch *et al.* (*Schweiz. med. Wschr.*, 1946, **76**, 1035) on a case of polymyositis which

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FIG. 1.—Erosion of great trochanter following tuberculosis of the bursa with secondary infection. Typical peripheral erosion with some sclerosis.

FIG. 2.—Long-standing tuberculous erosion: sclerosis and new bone formation due to secondary infection.

FIG. 3.—Tuberculosis of great trochanter arising in the bone. Extensive destruction of centre of trochanter but no involvement of soft tissues.

**MILIARY APPEARANCES IN LUNGS IN MITRAL
STENOSIS—HAEMOSIDEROSIS: T. E. GUMPERT**

FIG. 1.—Radiograph of the chest.

FIG. 2.—Radiograph ten years before Fig. 1.

FIG. 3.—Infraclavicular area magnified.