abnormality (Mair, 1932). The upper thoracic cage was rigidly fixed, while the lower ribs moved on respiration. The abdomen was normally supple, and the appendicectomy scar well healed.

A biopsy report on June 19, 1950, stated: "The specimen is dense smooth white bone 2.2 by 2 by 1 cm., seen on section to consist of well-formed cortical lamellar bone, traversed by Haversian systems, and also central trabeculae of lamellar spongy bone enclosing adipose marrow." Extensive laboratory tests gave no abnormal values.

A radiological report stated: "There is widespread deposition of extraskeletal bone, particularly around the shoulder- and hip-joints and on each side of the vertebral column. The asymmetrical arrangement of bony bands has caused scoliosis.

Discussion

This disease is characterized by the deposit of heterotopic bone in relation to voluntary muscle. Although muscle groups appear to be involved it seems certain from the literature that the fibrous layers of fascia and aponeuroses are the primary sites, and that the process spreads into the adjacent muscle, where new bone forms (Greig, 1931). This patient illustrates many of the characteristic features. The onset within the first two years of life is common, though it has been known to begin in adults (Frejka, 1929) and to have been present at birth (Mair, 1932). The absence of anything similar in the family history is in keeping with most recorded cases, though Burton-Fanning (1901) calls attention to a father and son who were victims of the disease. It is estimated that in 75% of cases there is an associated abnormality of the hands or feet—for example, microdactyly or hallux valgus (Ryan, 1945). In this case no such malformation was present. These concomitant congenital lesions, which suggest that the origin of the disease is prenatal, are sometimes inherited (Rosenstirn, 1918).

Laboratory tests and the bone biopsy failed to reveal any abnormality. The bone appears to arise in connective tissue where haemorrhage has occurred.

While most patients are boys, no significance can be attached to this, for in a rare disease the sex ratio may well be distorted. No relationship was discovered to infection or "rheumatism." Trauma plays a varying part in the production of episodes. It may determine the location of the lesion or may be noticed and be given exaggerated importance in the initial stage of the episode.

The effect of excising a prominent piece of bone in the back and following with a course of deep *x*-ray therapy (1,000 r) has been tried. So far as can be determined, no new bone has formed at this site. It is improbable that radiotherapy will improve the surgical efforts, till now disappointing, to mobilize joints. No method of treatment has yet been found to have any effect on the progress of this condition, which pursues a relentless course until the whole body has been immobilized, and finally the patient succumbs to intercurrent infection.

I am indebted to Dr. I. Doniach for the pathological report, to Miss H. Wilson for Fig. 4, and to Mr. M. R. Ewing for permission to publish this case.

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In London on May 7, 8, and 9 is being held the first International Home Help Conference, at which, under the auspices of the National Association of Home Help Organizers, delegates from comparable organizations in Belgium, Finland, France, Holland, Norway, Sweden, Switzerland, and other countries will discuss administrative problems in this branch of social welfare.

A CASE OF GLANDULAR FEVER WITH CEREBRAL COMPLICATIONS

BY

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Crowther (1951) described the case of a man aged 20 with glandular fever and involvement of the central nervous system, and summarized reported cases. Because of their paucity another is recorded.

Case Record

An unmarried seamstress aged 19 was admitted on August 21, 1951. Three weeks previously, while camping, she complained of persistent headache and giddiness. Seven days before admission the giddiness worsened, especially on looking to the left, objects rotating clockwise. She complained of intense malaise and pain in the back. She noticed that speech and thinking were difficult. For 48 hours before admission she was nauseated and vomited several times. Micturition was normal, the bowels were costive, and menstruation was normal. Her past history was uneventful.

On examination she was apyrexial; pulse rate 64, regular: respirations 22. She was a well-built girl with a vacant expression, drowsy, with thick speech, slow cerebration, and lack of concentration, although she answered questions rationally. There was no jaundice or anaemia; the lymph nodes were not enlarged. Neurological examination showed diminished deep reflexes in the arms and legs; abdominal reflexes were present; plantar reflexes were flexor. There was no sensory loss or paralysis. The pupils were unequal, the left being larger than the right; reaction to accommodation was brisk, sluggish to light. Retinoscopy was normal. Other systems were normal.

Drowsiness continued for four days, with some retention of urine, relieved by catheterization. She vomited bilious fluid several times and still complained of headache and giddiness, especially on moving the head. There was also considerable photophobia and she was content to lie listlessly in bed. Six days later the headache and giddiness were less severe, and she was rational, fully conscious, and orientated in time and space. Progress was uneventful, and she was discharged on September 8. Treatment was symptomatic.

When seen on September 25 and October 9 she had lost some weight, but looked and felt well. No abnormal physical signs were detected.

Investigations.—On admission, catheter-urine was normal; culture, sterile. Rectal and vaginal swabs contained no pathogens. The Widal test for enteric and abortus groups was negative. Blood urea, 34 mg. per 100 ml. White-cell count 7,800 (polymorphs 37%, lymphocytes 54%, monocytes 9%). Glandular fever cells present. Paul–Bunnell test, positive 1 in 512. Wassermann reaction and Kahn and gonococcal complement-fixation tests negative. On August 23 an *x*-ray film of the chest and skull was normal, and the Mantoux test negative at 1 in 1,000. On August 24, by lumbar puncture, 15 ml. of clear colourless fluid was withdrawn; pressure 100 mm. H_2O. There was a free rise and fall on jugular compression. Cerebrospinal fluid showed: cells less than 1 per c.mm.; protein, 25 mg. per 100 ml.; globulin, no increase; sugar, 75 mg. per 100 ml. Paul–Bunnell test negative. No organisms direct or on culture. On September 6 the Paul–Bunnell test was positive 1 in 256. On September 25 the Paul–Bunnell test was still positive 1 in 256. White-cell count was now 6,200 (polymorphs 45%, lymphocytes 45%, monocytes 9%, eosinophils 1%).

Discussion

This case raised several problems. Without fever or palpable lymph nodes and spleen it is probably impossible to diagnose glandular fever clinically. The history and signs suggested enteric fever or leptospirosis. Until the white-cell count was done the diagnosis was not suspected. No history of sore throat or swelling of the neck was admitted by the patient or her relatives. Because of her rapid recovery it must be assumed that she was in the late stage of the illness, any premonitory signs being overlooked—in contrast with Crowther's patient, who was desperately ill. As Tidy (1950) says, diagnosis is difficult in a patient who some time after a pyrexial attack presents with lymphocytosis, for either this or glandular swelling may persist for some months.

A surprising feature was the normal cerebrospinal fluid. This, however, is not incompatible with involvement of the brain substance, especially in virus disease. Greenfield (1947) holds that the diagnosis of encephalitis during life, especially in sporadic cases, depends more on elimination than on finding specific changes in the blood or cerebrospinal fluid. Many diseases may simulate encephalitis, and it may be impossible to make a definite clinical diagnosis.

The cerebral signs could be due to toxaemia from preceding generalized infection with the virus, if such be the cause of infectious mononucleosis. On the other hand, the normal cerebrospinal fluid could be accounted for by an acute toxic encephalopathy as distinct from meningitis (Brain, 1947).

The neurological manifestations of this disease, however, are varied and bizarre. There is no constant order in which the ordinary manifestations and the neurological symptoms develop, and they may vary in their comparative severity. They may occur simultaneously, as in the case of Epstein and Dameshek (1931), or at some interval after the systemic signs, as in Geliebter's (1946) and Crowther's (1951) cases; or the fever may have run its course, to be followed by nervous symptoms, or the latter may precede the former. Tidy (1950) says that in the more severe neurological forms the glandular swelling tends to be slight and may be overlooked.

The interpretation of the Paul–Bunnell reaction in neurological cases needs careful consideration, especially in the absence of other evidence. So far as is known, it is not positive in high titre in any other disease (Tidy, 1951, personal communication). In a disease with so bizarre a clinical picture, however, it is equally difficult to assess a negative reaction. Many missed cases or cases not diagnosed might have proved positive on repetition later in the disease.

Neurological involvement in a disease which essentially affects the reticulo-endothelial system is of puzzling interest. It may occur because the normal cerebrospinal fluid contains a varying number of lymphocytes and large monocytes, derived from the meninges and the brain tissue itself, and entering the cerebrospinal fluid via the perivascular spaces. Again, van Bogaert (1933) believes that post-infective encephalomyelitis is allergic in origin, and Rich (1946–7) has demonstrated the vascular basis of hypersensitivity. Miller (1951), too, has summarized the evidence, and thinks that the post-infective encephalomyelitis of measles, etc., polyarteritis nodosa, and cerebral serum sickness have a common allergic basis. He feels that the post-infective group is a manifestation of hypersensitivity to some antigenic product in a variety of infections chiefly of virus origin and acting selectively on the nervous system, just as glomerulonephritis is said to be due to streptococcal hypersensitivity.

The multiplicity of the nervous symptoms in glandular fever suggests, too, an allergic origin; for there is no known virus infection, apart possibly from poliomyelitis, which produces such capricious involvement at every level of the nervous system. In other words, the basic pathology of the nervous complications, or even of the disease itself, may be primarily a disorder of blood vessels—that is, an allergic vasculitis. Although antihistamine drugs were not used, it might be of interest to try their effect in future cases. Chloramphenicol has been tried, but in the absence of a known cause its use must remain empirical except in dealing with secondary invaders.

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Medical Memoranda

Wandering Spleen During First Decade of Life

This is a comparatively rare condition. Most reports in the literature are confined to cases in which torsion has occurred. Abell (1933), in a review of the literature up to 1933, reported 95 cases with torsion. Emmett and Dreyfuss (1943) reported a further 25 cases between 1933 and 1943. At the Mayo Clinic only 2 out of 646 splenectomies performed prior to 1934 were for this condition.

The aetiology is that during the development of the stomach, when the dorsal wall rotates to the left it carries the greater omentum, in which the spleen develops, with it. If the attachments between the spleen and stomach are deficient the spleen gradually increases its range of movement (Truesdale and Freedman, 1938). Contributory factors are enlargement of the spleen and visceroptosis. In Abell's series torsion occurred most often between the ages of 20 and 40, with a preponderance of females but not a significant majority of multiparae. Only one case occurred in the first decade of life.

The case here reported is of interest in that it presented as an abdominal tumour and was first noticed by the parents of the child during the second year of its life.

Case Report

An African female child (Muzinza) aged about 10 was brought to hospital by her parents, as she had an abdominal tumour which they thought was gradually increasing in size. They were emphatic that they had first noticed the tumour on the right side when the girl began to walk during her second year. Living in a malarious area, they knew the normal position of an enlarged spleen. Apart from occasional fever, presumably malaria, the child had never been ill.

On examination she was seen to be rather thin and slightly anaemic. A visible protuberance was found to be caused by a tumour stretching from the umbilical to the right lumbar area. The tumour was smooth, firm, and painless even with movement. Repeated examinations of stool, urine, and blood showed no parasites. Her haemoglobin was 70% (Lovibond).

It was decided to perform an exploratory laparotomy. A lower right paramedian incision was made, this being the site of the tumour at the time. On incising the peritoneum the spleen presented and was readily delivered. Its attachments consisted of a grossly elongated pedicle and the omentum, which was adherent to the spleen in two places. The vessels in the omentum were very dilated, and it appeared as if a collateral circulation had been estab-