The manner in which glandular-fever infection might have a beneficial effect on the acute leukaemic process is quite uncertain. The cases of monocytic leukaemia described above were all of the "Schilling" type, which seems to me to bear a distinct resemblance both in its site of origin and in some of its clinical features to the more severe forms of glandular fever. The large type of glandular-fever cell seen in the first few days of acute glandular fever bears a close resemblance to certain of the leukaemic monocytes, although the mature cell of glandular fever is quite unlike any variant of the leukaemic monocyte or monoblast. It is possible that infection by the benign condition exerts a diversionary influence on the malignant leukaemic process.

It would be obviously most unwise to draw any sweeping conclusions from this very small series of cases. It does seem, however, that the clinical and haematological results obtained are more than can be explained either by the blood transfusions which some of the patients received or by chance.

It is suggested that further trial of the effect of induced glandular fever in cases of acute monocytic leukaemia is justified. It is even possible that in suitable cases the effects might be more profound and lasting than in those described.

Summary

Observations on the effect of glandular fever infection, natural and induced, in cases of acute leukaemia are recorded. It is concluded that there is evidence that such infection may in some cases be responsible for remissions in leukaemic disease.

Thanks are due to Dr. B. B. Hosford and Dr. J. M. Ranking for their co-operation, to Professor G. Payling Wright for helpful criticism, and to Dr. C. J. C. Britton for two batches of the glandular-fever serum used.

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MONOCYTIC LEUKAEMIA PRESENTING AS POLYARTHRITIS IN AN ADULT

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Leukaemia presenting as acute polyarthritis is common in children but rare in adults. There is no agreement about the pathological cause of this joint involvement, so the following case, in which an infected joint was examined histologically, is reported.

Acute rheumatism and leukaemia have been reported as occurring together by Ehrlich and Forer (1934). Uncomplicated leukaemia presenting as acute polyarthritis has been described by many authors, and its rarity in childhood was stressed by Bichel (1948) and Baldrige and Awe (1930). A few adult cases have been recorded by Seward (1930), Barney (1933), Henschen and Jezler (1935), and Wintrobe and Mitchell in 1940, and the whole question of bone and joint lesions in acute leukaemia has been reviewed by Dresner (1950).

Case History

In February, 1950, a 39-year-old police constable developed a febrile illness diagnosed as measles. In the following three months he lost nearly a stone (6.4 kg.) in weight and complained of fleeting pains in different joints. No abnormality was seen in a chest x-ray film, so he was referred by his doctor to a physiotherapy department. X-ray examination of the spine and pelvis showed no abnormality, but an E.S.R. of 77 mm. in the first hour (Westergren) and a normocytic anaemia with Hb 66% (9.8 g.%) were found. The leucocytes totalled 5,000 per c.mm., with a normal differential count. At the end of May his elbows, knees, and left ankle became swollen, and he began to sweat excessively. He was referred to a surgeon, and thence to hospital. He was admitted on June 14 with a provisional diagnosis of acute infective arthritis.

On examination he was found to be a pale, thin, excitable, and self-depreciative man, with a moderate pyrexia and accompanying tachycardia. His tongue was furred and the fauces were inflamed. One small lymph node was palpable in each axilla. Both knees and both ankles were swollen and tender, and the left elbow, though not swollen, was painful on movement. There was no other physical abnormality. The urine contained a small amount of albumin but no other abnormal constituents. The E.S.R. was 72 mm. in the first hour (Westergren). The Hb was 56% (8.3 g.%) and slight anisocytosis was present. The leucocytes totalled 5,000. Routine agglutination tests were all normal and blood culture was sterile. X-ray films of the chest and ankles showed no abnormality.

During the next 14 days systemic penicillin and sodium salicylate were given in doses large enough to produce symptoms of salicylism and a serum salicylate level of 40 mg. per 100 ml., but his fever and flitting joint pains continued. The E.S.R. rose to 140 mm. in the first hour, and 18 days after admission his Hb had dropped to 46% (6.8 g.%) with 2,800,000 erythrocytes. The leucocyte count remained at 5,000 (polymorphonuclears 50%, lymphocytes 43%, monocytes 7%, and an occasional nucleated erythrocyte).

Two days later he became extremely ill. The E.S.R. was 150 mm. in the first hour, the Hb fell sharply to 34% (5 g.%), while the leucocytes increased to 5,800. At this stage a diagnosis of acute aleukaemic leukaemia was considered and a sternal marrow puncture was performed, but a satisfactory marrow specimen was not obtained. An intravenous infusion of 4 pints (2.3 litres) of packed red cells was given, and this temporarily raised the haemoglobin percentage without improving the patient's general condition.

On July 9 the tonsils and some cervical and inguinal lymph nodes became enlarged, but a chest x-ray film showed no enlargement of hilar nodes. Haemorrhages appeared in the retinae and palatal mucosa. The leucocyte count was 10,000 (polymorphonuclears 50%, lymphocytes 41%, monocytes 9%). Next day the leucocytes rose to 12,000 and the film showed abnormal mononuclear cells. Sternal puncture was again unsuccessful. By July 12 the Hb was 48% (7.2 g.%). The leucocyte count was 13,800 (stem cells 9%, monoblasts 20%, promonocytes 34%, monocytes 11%, lymphocytes 12%, neutrophil polymorphs 13%, plasma cells 1%). There was one nucleated red cell per 100 leucocytes. Next day the total leucocyte count had risen to 17,000. The picture was thought to be that of acute monocytic leukaemia.

By this time the patient was prostrated, with a swinging temperature and severe dyspnoea. Both ankles were swollen and there were effusions in both knee-joints. There was generalized lymph-node enlargement and the liver was felt three fingerbreadths below the right costal margin. The spleen was not palpable. Several small hard nodules were felt in the scalp. During the next few days the glands became bigger and the spleen became palpable three finger-

breadths below the ribs. Oedema of the ankles appeared. The haemoglobin percentage fell to 26% (3.8 g.) and the total leucocyte count to 10,600. Death occurred on July 20.

Relevant Necropsy Findings.—The skin and all organs were pale, with many petechial haemorrhages. Several tough, pale nodules were present in the scalp, and there was a large haematoma on the extensor surface of the right forearm. The lymph nodes were all enlarged and pale. The spleen was enlarged, weighing 26 oz. (737 g.). On section it was red, soft, and coarsely granular. The liver weighed 92 oz. (2,608 g.), and was pale and firm on section. The right ankle-joint was opened. The synovial membrane, synovial fluid, and articular cartilage looked normal.

Report on Histology.—"Sections of liver, spleen, lymph node, scalp nodule, skin haematoma, kidney, and small intestine show, in greater or less degree, infiltration by immature leukaemic cells. A portion of the synovial membrane of the left ankle shows infiltration by leukaemic stem cells. The cells have round or ovoid vesicular nuclei and a thin rim of poorly staining basophilic cytoplasm. The cells are especially densely packed in a synovial villus and tail off into the deeper layers between the perisynovial fat cells."

Discussion

In a review of the joint lesions complicating acute leukaemia Dresner states that "little has been written about the pathology of the joint lesions in leukaemia." The cause has been variously suggested as leukaemic deposits in the metaphysis (Bichel), haemorrhage in the joint (Balldridge and Awe), and haemorrhage in the articular surfaces (Conybeare, 1936), but in most of the few cases in which the joints themselves have been examined no significant changes have been found (Wintrobe and Mitchell, Bichel). Dresner reports a case in which the synovium was extensively infiltrated by leukaemic deposits, and concludes that "such leukaemic synovitis is presumably responsible for many of the joint symptoms of leukaemia."

In our case the synovium of an ankle-joint looked normal at necropsy, but was found on histological examination to be infiltrated by immature leukaemic cells. No evidence of leukaemic deposits in the metaphyses was shown by x-ray films. The articular cartilage was macroscopically normal, although unfortunately it was not examined histologically. The scalp nodules were an interesting feature of the case. Poynton and Moncrieff (1929) reported two cases of children with fever, pain, swelling in joints, and subcutaneous nodules in the scalp. Their patients also had enlarged livers, spleens, and glands, and progressive anaemia with terminal haemorrhages. They quote a third similar case. All three cases had a "mononuclear response in the blood."

Summary

A case of acute monocytic leukaemia in an adult is described. It presented as a febrile polyarthritis. Post-mortem examination showed leukaemic infiltration of the synovium of a joint.

We should like to thank Dr. T. A. J. Wickham for his histological report.

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An aural microscope designed by Mr. C. S. Hallpike, director of the Medical Research Council's Otological Research Unit, has been adapted for chick sexing. It was originally made to facilitate delicate operations within the ear. The National Research Development Corporation is bearing part of the initial production costs of making the instrument for the poultry trade.

MASS TREATMENT OF TREPONEMAL DISEASES, WITH PARTICULAR REFERENCE TO SYPHILIS AND YAWS*

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Syphilis, yaws, bejel, pinta, and similar conditions caused by treponemes are responsible for various acute and chronic pathological conditions resulting in incapacitation and invalidism of considerable social and economic importance throughout the world. Since these diseases, caused by *Treponema pallidum*, *T. pertenue*, *T. carateum*, and other closely related micro-organisms, constitute a group of related infections, an increasing number of investigators^{1 2 3 4 5 6 7} are calling for a comprehensive world view of treponematoses rather than a narrow approach based only on the mode of transmission or on minor variations in the resultant clinical syndromes.

Venerally acquired syphilis is prevalent, to a greater or less extent, in all parts of the world, including highly developed countries and communities. There have also been recognized in recent years a number of important geographical "pockets" of treponemal infections, clinically identical to syphilis but epidemiologically similar to yaws. Among them are the "endemic" syphilis of Bosnia, Yugoslavia,^{8 9} Madras, India,¹⁰ Bechuanaland, South Africa,¹¹ and Tahiti in the South Pacific,¹² as well as the "njovera" of Southern Rhodesia.¹³ These are examples of non-venereally transmitted communicable treponemal disease in children. "Bejel" is also a non-venereal treponemal infection^{14 15} transmitted by direct and indirect contact among children in the Eastern Mediterranean area, particularly in Syria, Iraq, and neighbouring countries. Of even greater importance, however, are tropical framboesia (yaws) and pinta, which affect millions of children and adults in tropical and semi-tropical areas. (In Indonesia alone there were, until recently, an estimated 10 million cases of yaws⁷ and in middle America it is estimated that a million or more cases of pinta exist.)

It is unfortunate that, in the areas of the world where mass serological testing would reveal the highest incidence of cases, the facilities for serodiagnosis are the least adequate. For example, whereas sample serological surveys in Saskatchewan, Canada, have shown only 0.25% of positive readings,¹⁶ in Bergen, Norway, 0.61%,¹⁷ and in London, England, 0.67%,¹⁸ on the Gold Coast of Africa as much as 50%,¹⁹ in Haiti 39%,²⁰ and in India 25-30%²¹ of non-negative serological reactors have been found in various population groups tested.

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