primary disease. For these rather empirical reasons and because of its greater acceptability to the patient she was treated with probenecid, and the improvement was striking. It is possible to conclude from Fig. 4 that in company with the fall in plasma urate a significant reduction in plasma phosphorus also occurred without significant change in plasma calcium. Renal phosphate handling, however, was entirely within the normal range while taking probenecid. We did not obtain a figure before probenecid so the exact effect of the drug in facilitating the dissolution of the calcific deposits is not known.

Whatever the mechanism of the drug action the results are thought convincing enough to suggest a direct causal effect on the dissolution of the calcinosis. The patient's history suggested that the changes originally present were of long duration. No change occurred during the first year of treatment with Na EDTA, nor indeed by the October 1967 x-ray film (not shown here) taken after nine months of slowly increasing probenecid. More rapid dissolution occurred later only when the full dose of 2 g a day had been reached. It seems difficult to attribute the response to some other unknown cause, and we are unaware that spontaneous dissolution has ever been described.

Until adequate therapy or prevention is available for the tissue damage itself, which so often leads to calcinosis, attempts to inhibit calcification will remain a therapeutic necessity. Further trials of Aludrox or probenecid are thus warranted because we believe that these drugs act by lowering $\text{Ca} \times \text{P}$ which tends to redissolve the deposits when formed rather than as a mechanism which will prevent the deposits. Other drugs, including salicylates (Somogyi *et al.*,

1969) and diphosphonates (Francis *et al.*, 1969), have also been shown experimentally to inhibit soft tissue calcification, and their therapeutic trial in human calcinosis is also indicated.

We are grateful to the dietitians and laboratory and nursing staff of the metabolic ward, U.C.H., for their continuous cooperation. T.C.B.S. acknowledges support of an M.R.C. grant during part of this work. Professor E. G. L. Bywaters kindly came to see the patient on her first admission to help us in making a diagnosis. We gratefully acknowledge the continuing help and support of the patient's general practitioner, Dr. Kenneth Milne.

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MEDICAL MEMORANDA

Cataract after Busulphan Treatment

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British Medical Journal, 1972, **1**, 218-219

Busulphan, first introduced into clinical practice by Galton in 1953, is the drug of choice in the treatment of chronic myeloid leukaemia. Cataract as a toxic effect of prolonged busulphan therapy has been reported only rarely (Podos and Canellos, 1969). This report describes the case of a young adult with chronic myeloid leukaemia who developed mature cataract in both eyes during busulphan therapy.

Case Report

A male university student aged 19 was referred to one of us (V.J.P.) in December 1965 because of increasing lassitude for one month. On physical examination he was found to be anaemic, the liver was enlarged up to 5 cm below the right costal margin, and the spleen was enlarged up to the level of the umbilicus. There were no ocular changes and the fundi were normal. Laboratory investigations were: Haemoglobin 10 g/100 ml, total leucocyte

count 150,000/mm³ (97,000 myelocytes, 15,000 myeloblasts, 22,500 polymorphs), platelet count 360,000/mm³, sternal bone marrow typical of chronic myeloid leukaemia, urine analysis normal, blood urea 40 mg/100 ml, and stool negative for ova and cysts.

On 14 January 1966 he was started on busulphan 8 mg daily with a weekly check on blood counts. Towards the end of the first month his total leucocyte count had fallen to 26,400/mm³ and the dose was reduced to 2 mg daily. Subsequently with 1-2 mg of busulphan daily and occasional blood transfusion he remained well. The dose of busulphan was adjusted to keep the total leucocyte count near 10,000/mm³.

In March 1970 he noted failing vision in the right eye and three months later in the left eye. On examination this was found to be due to an early cataract. The fasting blood sugar was 90 mg, post-prandial 135 mg, glucose tolerance test was normal, and the serum calcium was 10.5 mg/100 ml. There was no history of trauma to the eyes or administration of drugs other than busulphan. Failure of vision in both eyes progressed rapidly. On 16 September 1970 an extracapsular extraction of a mature cataract was done in the right eye and on 14 March 1971 the cataract in the left eye was also removed. During both operations it was found that the nucleus of the cataract was small and the cortex, of semifluid consistency, easily washed away after the delivery of the nucleus. The lens capsule was seen to be very thin and he had 6/6 vision without needling and with the aid of glasses.

Five months after the second operation the patient remained well and was in the sixth year of survival after the diagnosis of chronic myeloid leukaemia.

Comment

Though busulphan had been found to be cataractogenic to experimental animals (Sallmann, 1957) the development of cataract in patients on busulphan therapy was reported only recently (Podos and Canellos, 1969). These authors

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studied 43 patients with chronic myeloid leukaemia for evidence of lens changes. Of these, eight patients undergoing treatment with busulphan had lenticular opacity and two (mean age 54 years) had definite posterior subcapsular changes consisting of central irregularity and polychromatic sheen.

Cataracts have not been reported in leukaemic patients though lesions of other parts of the eyes have been well documented (Allen and Straatsma, 1961). In southern India cataract is rare in young persons and when present is usually congenital, traumatic, or diabetic in origin. In the present patient no reason other than busulphan therapy could have accounted for the cataract. He had been taking busulphan

since 1966 with necessary adjustment of the dose, the average dose range being 1-2 mg daily before the development of cataract.

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Infectious Mononucleosis with Pulmonary Parenchymal Involvement

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British Medical Journal, 1972, **1**, 219-220

Pulmonary parenchymal involvement is an uncommon finding in infectious mononucleosis. A case of infectious mononucleosis is reported in which bilateral pulmonary parenchymal infiltrates simulating septicaemia with metastatic pulmonary involvement occurred.

Case Report

A woman aged 31 was admitted to hospital in March 1969 with a pyrexial illness of 24 hours' duration. Her temperature rose to 41°C, her blood pressure fell to 80/50 mm Hg, and she became semi-conscious. During lucid periods she complained of headache and photophobia. The spleen was palpable and there was appreciable lymph node enlargement in both supraclavicular groups and in one axilla.

Four weeks before admission she had had an illegal abortion by dilatation and curettage for a first-trimester pregnancy. On admission to hospital she had a vaginal discharge and was thought to have developed a pelvic infection complicated by septicaemia. Vaginal swabs and repeated blood cultures by aerobic and anaerobic methods yielded no appreciable growth. These investigations had been undertaken before treatment was begun with intravenous fluids and a broad-spectrum antibiotic regimen consisting initially of penicillin, methicillin, and ampicillin. Kanamycin replaced ampicillin after two days. Pelvic examination including dilatation and curettage did not suggest a source of infection.

On admission the haemoglobin was 9.8 g/100 ml, the W.B.C. was 2,600/mm³ (normal differential), and the platelets were 50,000/mm³. Other blood measurements, results of urine analysis, and C.S.F. were normal. The electrocardiogram showed a sinus tachycardia of 130/min and a chest x-ray picture was suggestive of interstitial pulmonary oedema. After four days of antibiotic treatment there was no improvement in her condition. The results of bacteriological investigations were negative so treatment was stopped. She then became jaundiced, with serum bilirubin 3.9 mg/100 ml, serum alkaline phosphatase 68 King-Armstrong units, and serum alanine aminotransferase 230 units. The radiological changes in the chest were more pronounced (see Fig.). Some of the areas of opacity had become confluent and others showed appearances suggestive of early cavitation, with a small amount of pleural fluid present at

the left base. A Paul-Bunnell screening test for heterophil antibodies was strongly positive. The antibody titre was then measured in saline (1 in 224) after absorption with guinea-pig kidney (1 in 112) and after absorption with ox red cells (negative). The W.B.C. at this time was 6,000/mm³, of which atypical lymphocytes accounted for 62%.

Increased areas of consolidation with a small left pleural effusion.

During the next two days, without further treatment, the patient's level of consciousness improved, her blood pressure returned to normal, and she began to expectorate mucopurulent sputum. Over the following two weeks she continued to improve, her temperature fell, and her conscious state returned to normal. In the same period the liver function, platelet count, and peripheral W.B.C. also became normal and the abnormal chest x-ray appearances began to clear. She had a urinary tract infection due to a coliform bacillus which responded to treatment with nalidixic acid, and oral candidiasis was treated with nystatin suspension by mouth.

When discharged from hospital four weeks after admission she was weak but otherwise symptom-free. The chest x-ray picture, peripheral blood findings, and results of urine microscopy and culture were all normal. At follow-up seven months later she remained well.

Comment

Finch (1969) suggested that in infectious mononucleosis pulmonary parenchymal involvement with radiological appearances similar to those of "atypical viral pneumonia" is to be found in 3-5% of patients. The clinical and radiological studies he cited in support of this statement (McCort, 1949; Arendt, 1950) are unsatisfactory, especially as regards their