say which. The inflammatory reaction in the tissues is of a very low order such as may accompany any reconstruction of bone."

Culture from the right hip and guinea-pig inoculation showed no evidence of tuberculosis.

Discussion

This patient has been the subject of wide interest, and a number of opinions have been obtained in respect of the aetiology of her arthritis. All observers agree that osteoarthritis was the primary joint disease. The slow progression from onset in 1937 to the inception of treatment in 1956 contrasted with the florid advance of joint destruction culminating in complete disorganization during the period of therapy with intra-articular injections of hydrocortisone acetate. The final picture, both clinical and radiographic, was indistinguishable from the condition described by Charcot. There was no evidence of neurological disease. Rheumatoid arthritis, tuberculosis, and other infective processes were excluded by serological tests and the results of biopsy.

The striking similarity of this picture to that of neuropathic arthritis suggests that temporary suppression of pain of local origin by frequent intra-articular injection encourages a damaging degree of movement and weight-bearing. This in turn permits the development and rapid progression of joint destruction. The deterioration observed in this patient during treatment with locally injected hydrocortisone suggests that the procedure is potentially dangerous. This is particularly so since it has been our experience that symptomatic benefit from injections may lead to a vicious circle of dependence despite worsening disease. Careful radiological supervision is desirable if prolonged treatment by intra-articular injections of hydrocortisone and related compounds is undertaken.

Summary

The development of a severe destructive and relatively painless arthritis (Charcot joint) is reported during prolonged treatment of an osteoarthritic hip with intra-articular injections of hydrocortisone acetate. The need for careful radiological supervision during such treatment is emphasized.

We are indebted to Professor C. E. Lumsden for his helpful criticism.

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Remotivating the Mental Patient, by Otto von Mering and Stanley H. King (Russell Sage Foundation, New York, 1957; 216 pp., $3), is based on a survey of in-patient care in 30 mental institutions in the United States. In spite of crowded conditions and shortage of staff it was found that courageous and promising programmes of rehabilitation had been developed in some places. The authors consider that such experiments as the elimination of restraint, the encouragement of the patient's interest in his personal appearance, transformation of his environment into a more normal atmosphere, and the promotion of social and recreational activities, among other things, are justified by the results they produce. Guidance is given in carrying out these and other measures of rehabilitation.

SYMPTOMLESS MYELOMATOSIS

BY

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[WITH SPECIAL PLATE]

Myeloma commonly presents with pain in the bones. Out of 97 patients with myeloma examined by Snapper *et al.* (1953), 92 suffered from bone pain. Other common presenting features are pathological fractures, vertebral collapse with associated neurological complications, renal impairment, anaemia, and recurrent pulmonary infections.

The patient whose history is here recorded has been under continuous observation for 5½ years. For four years she was free from any symptoms or signs, except that she had a persistently raised erythrocyte sedimentation rate (120–130 mm. in one hour by the Westergren technique), a moderate orthochromic anaemia (Hb 10.7 g. per 100 ml.), and a very high serum globulin (7–8 g. per 100 ml.). Sternal puncture showed some increase in plasma cells, but no abnormal forms.

Case History

The patient, a housewife aged 43, had been in good health until April, 1952, when she developed a small right pleural effusion following an attack of "bronchitis," and in May she was admitted to the Pleural Effusion Unit of Queen Mary's Hospital, Sidcup. The effusion resolved spontaneously, and she was discharged in August, 1952, when her chest was radiologically normal apart from pleural thickening. It was assumed that she had a primary tuberculous effusion, although no tubercle bacilli were isolated, but the Mantoux reaction was positive. The only unusual feature was that her erythrocyte sedimentation rate (E.S.R.) was persistently raised and remained in the range 117–131 mm. in one hour (Westergren). Estimation of her serum proteins showed a total protein value of 11.2 g. per 100 ml. (albumin 3.65 g., globulin 7.55 g.). The urine was normal and contained no Bence Jones protein.

Electrophoretic analysis: pH 8.0; μ=0.2; protein concentration 2 g. per 100 ml.

Ultracentrifugal analysis: protein concentration 1 g. per 100 ml.

FIG. A.—Electrophoretic and ultracentrifugal analysis, December 14, 1952.

On return home she attended the Croydon Chest Clinic for surveillance, and at the end of December, 1952, she came under our observation on account of her very high E.S.R. She stated that she felt well and had no complaints. She looked fit and no abnormal signs were found, apart from slight pallor. Blood count was normal except for a mild orthochromic anaemia (Hb 10.7 g. per 100 ml.). E.S.R. 125 mm. in one hour. Sternal marrow from a puncture in February, 1953, appeared to be normal, but a differential

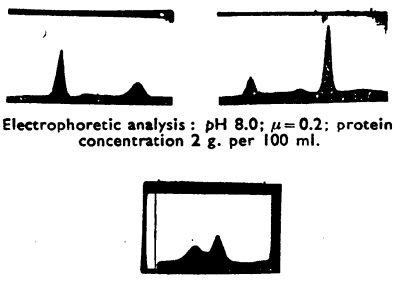
TABLE I.—*Serum and Urinary Proteins*

Date	Serum Proteins					Components Derived from Ultracentrifugal Analysis			Urinary Proteins	
	Total (g./100 ml.)	Components Derived from Electrophoretic Analysis							Bence Jones Protein	Total (mg./100 ml.)
		Albumin (g./100 ml.)	Globulins (g./100 ml.)			S_{20w}4·0	S_{20w}6·5	S_{20w}17–19		
			α	β	γ					
Aug. 52 ..	11·2	3·65		7·55*					Nil	Nil
Dec. 52 ..	10·9	3·45	0·6	0·85	6·0				,,	,,
Feb. 53 ..									,,	20
May 53 ..	11·0	3·4	0·7	0·9	6·0	40%	60%	Nil	,,	Nil
Feb. 54 ..									,,	50
Aug. 54 ..	11·6	3·8	0·7	0·8	6·3				,,	Nil
,, 56 ..	12·0	3·1	0·6	0·8	7·5				,,	50
Feb. 57 ..	13·8	3·9	0·6	0·9	7·9	35%	65%	,,	+	200
Oct. 57 ..	13·0	3·9	0·4	1·2	7·4				+	1,600
Dec. 57 ..	11·9	3·1	0·3	1·2	7·3	33%	67%	,,	+	800

* Total globulin by salt fractionation.

count showed 13% of plasma cells but no abnormal or immature forms. Radiography of chest, ribs, skull, spine (Special Plate, Fig. 1), pelvis, femora, and humeri revealed no abnormality. The urine was normal and contained no Bence Jones protein. The serum protein level was unchanged, total protein being 10.9 g. per 100 ml., and electrophoresis showed a marked increase in gamma-globulin (Fig. A). She continued to attend the out-patients' clinic at about three-monthly intervals, and she stated that she felt well and was free from symptoms up to and including her attendance in August, 1956—that is, four years since it was first known that she had a greatly raised E.S.R. and highly abnormal serum proteins. Physical findings were still normal, apart from pallor, but a trace of albumin in the urine (but no Bence Jones protein) was recorded for the first time. Her weight had very slowly fallen from 157 lb. (71.215 kg.) in 1952 to 131 lb. (59.420 kg.) in 1956. She insisted, however, that her usual weight was only about 135 lb. (61.235 kg.). The anaemia persisted (Hb 9.8 g. per 100 ml.) and the E.S.R. remained unchanged. Radiographs of skull and spine were normal.

In January, 1957, she complained of attacks of pain in the lumbar spine and also of febrile episodes which lasted for a week or so and made her feel very ill, but which were followed by recovery. In February, 1957, she was admitted to Mayday Hospital because of one of these attacks, and she was found to have tenderness over the sacrum and lower spine. Radiography showed osteoporosis and slight collapse of the bodies of several lumbar vertebrae, and there were some rather doubtful areas of erosion in the skull, humeri, and one rib (Special Plate, Fig. 2). Considerable albuminuria (200 mg. per 100 ml.) and Bence Jones proteinuria were found for the first time. Sternal marrow contained very numerous plasma cells. The diagnosis of clinical myelomatosis was thus confirmed. She made a satisfactory symptomatic recovery, and was discharged, at her own request, after three weeks. At home her pains returned, and she was readmitted with severe back pain in August, 1957. Radiographs now showed marked increase in the osteoporosis of the lumbar spine, with increasing collapse of all lumbar vertebrae (Special Plate, Fig. 3). She was treated with capsules each containing 0.5 g. of urethane and 25 mg. of "R 151" (Innes and Rider, 1955). This latter drug is an oral nitrogen mustard, β-naphthyl-di-(2-chloropropyl) amine. Dosage began with one capsule twice daily, and was increased four weeks later to one capsule three times a day. Leucopenia occurred at the end of seven weeks, and the dose was reduced to one capsule twice daily. After nine weeks the total leucocyte count fell to 900 per c.mm. and treatment was stopped. A week later the leucocyte count fell to 150 per c.mm., and treatment with blood transfusions and tetracycline was introduced. The patient made a satisfactory recovery from the agranulocytosis. In August she also received a short course of deep *x*-ray therapy to the spine. She was discharged from hospital with a spinal support in October. Results of electrophoretic and ultracentrifugal analysis at this stage are shown in Fig. B.



Electrophoretic analysis: pH 8.0; $\mu = 0.2$; protein concentration 2 g. per 100 ml.

Ultracentrifugal analysis: protein concentration 1 g. per 100 ml.

FIG. B.—Electrophoretic and ultracentrifugal analysis, December 17, 1957.

At the time of writing (March, 1958) she has all the clinical features of moderately advanced myelomatosis, and the course of the illness does not seem to have been influenced by radiotherapy or chemotherapy.

The principal biochemical and haematological findings are presented in Tables I–III.

TABLE II.—*Principal Haematological Findings*

Date	Haemoglobin (g./100 ml.)	Red Cells (per c.mm.)	White Cells (per c.mm.)	E.S.R. (Westergren: mm./hour)
Aug. 52 ..	10·4		5,400	131
Dec. 52 ..				128
Feb. 53 ..	10·7	3·5	5,050	131
June 53 ..	11·0	3·3	4,200	125
Nov. 53 ..				120
Feb. 54 ..	12·0	3·7	8,700	131
Mar. 55 ..	8·9	2·9	4,400	137
May 55 ..				147
Aug. 56 ..	9·8	2·8	3,400	141
Jan. 57 ..	8·6	2·8	4,800	146
June 57 ..	8·9			144
July 57 ..	8·3		5,000	153
Aug. 57 ..	8·6		2,800	
Sept. 57 ..	7·4*		150	
			850	
Oct. 57 ..	(1) 5·6†		2,500	
	(2) 9·0		1,700	153
Dec. 57 ..	10·4	3·3	3,600	136

* 2 pints (1·1 litres) of blood transfused before estimate.
† 3 pints (1·7 litres) of blood transfused after estimate (1).

TABLE III.—*Serum Chemical Analysis*

Date	Urea (mg./100 ml.)	Ca (mg./100 ml.)	Inorganic P (mg./100 ml.)	Uric Acid (mg./100 ml.)	Total Cholesterol (mg./100 ml.)	Alkaline Phosphatase (King–Armstrong Units)
Dec. 52	24					
May 53	22					
Aug. 54	22	9·2	3·7	5·5	170	5·2
Oct. 54	22	9·4	4·0		160	5·5
Oct. 55	21	9·3	3·5	5·4	170	4·5
Mar. 57	33*	—	—	—	—	—
Oct. 57	31	9·7	3·6	5·6	—	6·0
Dec. 57	29	9·7	3·6	5·5	—	6·0

* Maximum urea clearance value 78% mean of two successive periods.

Discussion

This case raises the interesting problem of the possible causes of hyperglobulinaemia and consequently raised E.S.R. According to Wintrobe (1956) the common causes are myelomatosis, lymphogranuloma venereum, sarcoidosis, disseminated lupus erythematosus, kala-azar, subacute bacterial endocarditis, cirrhosis of the liver, leukaemia, and chronic nephritis. To this list can be added "essential hyperglobulinaemia" as coined by Waldenström (1943, 1946, 1952), but the case for the existence of this condition does not seem to be fully established. Two of Waldenström's cases had macroglobulinaemia, which has now been shown by Martin and Close (1957) not to be a specific disease.

The finding of an increased number of plasma cells in the sternal marrow (13%) in December, 1952, certainly suggested myelomatosis as the correct diagnosis, because the upper limit of normal is usually regarded as being 1%–2% (Wintrobe, 1956; Whitby and Britton, 1957). A moderate increase in plasma cells, however, is not necessarily diagnostic of myelomatosis, as this may occur in rheumatic fever, collagen diseases, hypersensitivity reactions, cirrhosis of the liver, and Hodgkin's disease.

In myelomatosis *x*-ray changes in the bones are usually regarded as an essential feature, but it is now realized that a diffuse infiltration may occur without specific isolated lesions. Thus Wallerstein (1951) describes three such cases, and Kubota *et al.* (1956) found four in a series of 60 cases of proved myelomatosis.

The present case is described because such a long period (four years) had elapsed between the time when the patient was first known to have hyperglobulinaemia and the development of symptoms of clinical myelomatosis. During this time she seemed to be in normal health and carried out all her duties as a housewife. The only clinical abnormality was anaemia, which did not increase during this period (see Table II). Electrophoretic analysis showed marked increase in gamma-globulin, with the sharp peak characteristic of myeloma-globulin. Ultracentrifugal analysis showed an excess of proteins with an S_{20w} of 6.7, but no components of higher molecular weight. Another interesting point is that it was nearly five years before Bence Jones protein could be detected in the urine. This observation supports the suggestion of Putnam *et al.* (1956) that Bence Jones protein is not the direct result of degradation of the circulating or tissue proteins. It is also in accord with the now well-known fact that marked hyperglobulinaemia and Bence Jones proteinuria occur in inverse ratio (Snapper *et al.*, 1953). The pleural effusion which brought the patient under observation is presumed to have been tuberculous and not related to the subsequent development of myelomatosis, as no further chest complications have occurred and the chest has remained radiologically normal.

Summary

A case of myelomatosis is described in which four years elapsed between the discovery of marked hypergammaglobulinaemia and the development of signs and symptoms of this disease.

FOOTNOTE

The patient died on September 23, 1958. Necropsy confirmed the diagnosis of myelomatosis, there being extensive medullary and extramedullary deposits of plasma cells. There was moderate oedema of the lungs, but no evidence of tuberculosis.

One of us (N. H. Martin) wishes to acknowledge a grant from the free funds of St. George's Hospital, which enabled a portion of this work to be carried out.

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SUPPOSITORY TREATMENT OF HAEMORRHAGIC PROCTITIS

BY

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Haemorrhagic proctitis is a condition of unknown aetiology in which the rectum is diffusely inflamed. Other names for the condition are idiopathic proctitis and granular proctitis. If the inflammation extends into the sigmoid colon the condition is often referred to as proctosigmoiditis. The cardinal symptom is the passage of blood, pus, and mucus per rectum. There may be bouts of diarrhoea, but in between these the motions are usually firm or even costive. Indeed, some sufferers seldom or never experience diarrhoea. Rectal bleeding is more likely to be heavy when constipation is present, because of increased trauma during defaecation, and the blood is then separate from the main mass of the stool, not intimately mixed with it as in the diarrhoeal stool of classical ulcerative colitis. In between the passage of stools there are commonly several passages of blood or blood-stained mucus each day.

Lower abdominal pain may occur, low back pain is common, rectal pain is sometimes experienced, and tenesmus may be a feature; but the general health usually remains good and severe loss of weight and other signs of constitutional disturbance do not occur, with the conspicuous exception of anaemia. The anaemia is of the iron-deficiency type usually found in chronic blood loss and is sometimes severe. On sigmoidoscopy it is often possible to get above the

G. N. CHANDLER *ET AL.*: CHARCOT'S ARTHROPATHY AFTER HYDROCORTISONE

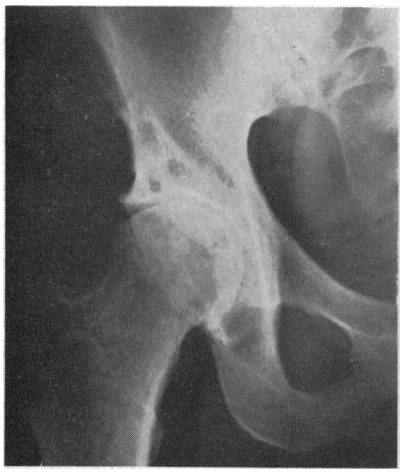

FIG. 1.—Radiograph of right hip in 1951. Note moderate osteoarthritic changes.

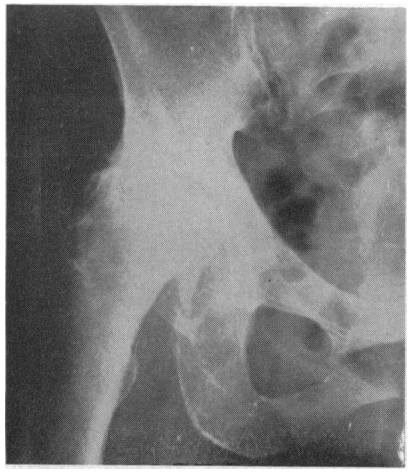

FIG. 2.—Radiograph of right hip after six months' treatment. Note marked osteoarthritic change with loss of joint space, sclerosis, and flattening of femoral head.

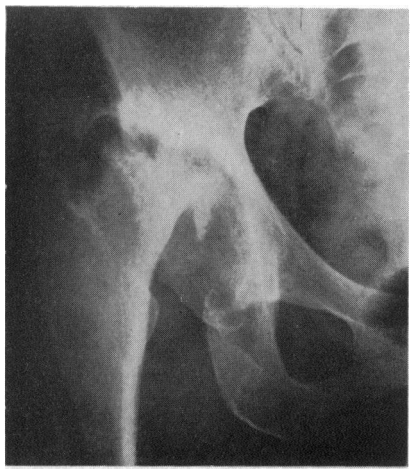

FIG. 3.—Radiograph of right hip after 18 months' treatment. Note gross destruction of femoral head and roof of acetabulum.

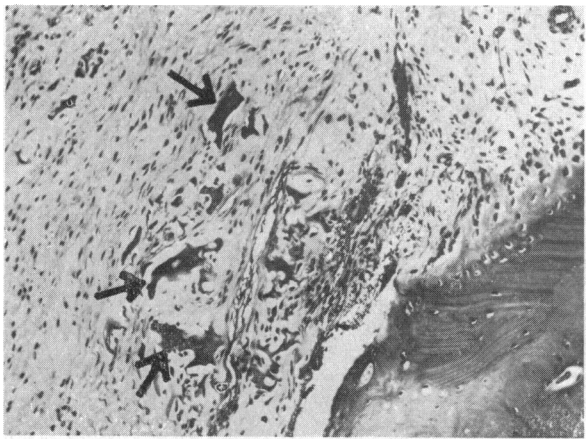

FIG. 4.—Field showing focus of bone resorption, with angulated fragments of necrotic bone indicated by arrows. There is some perivascular cellular reaction. (H. and E. ×80.)

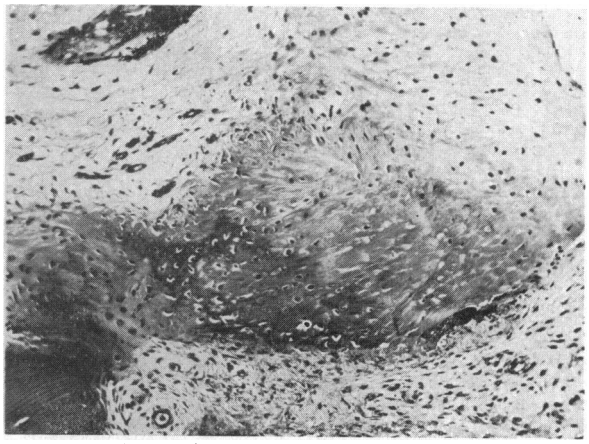

FIG. 5.—Field showing focus of new metaplastic bone formation spreading out from old bone seen (striated) in top left-hand corner. (H. and E. ×80.)

G. P. BAKER AND N. H. MARTIN: SYMPTOMLESS MYELOMATOSIS

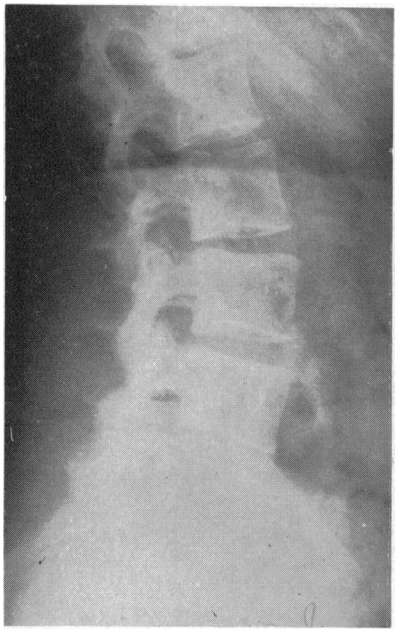

FIG. 1.—Radiograph of lumbar spine, February 9, 1953.

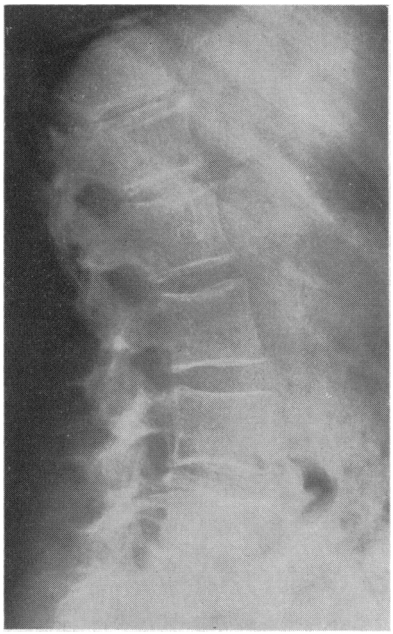

FIG. 2.—Radiograph of lumbar spine, February 7, 1957.

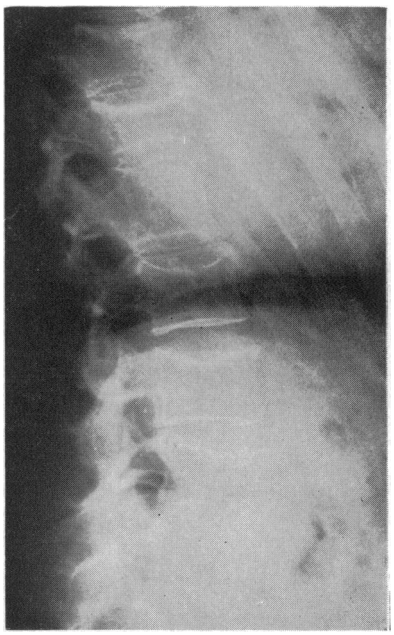

FIG. 3.—Radiograph of lumbar spine, August 10, 1957.