Recurring ‘red eyes’ due to seasonal hypercalcaemia

M. J. SMITH
M.B., M.R.C.P.

G. B. HEY
M.B., B.S.

St Luke’s Hospital, Guildford, Surrey

Summary
Recurrent hypercalcaemia associated with hypersensitivity to ultra violet light occurring in a patient who had had clinical sarcoidosis 14 years previously. Hypercalcaemia in sarcoidosis is a well known association, but it is less often realized that this hypercalcaemia may undergo seasonal variation (Taylor, Lynch and Wyser, 1963). The following case report describes recurring seasonal symptoms associated with hypercalcaemia which persisted for many years after the original diagnosis of sarcoidosis.

Case history
A 42-year-old man was referred with a 7-year history of red irritating eyes, morning nausea with occasional vomiting, polydipsia, polyuria and nocturia. The striking feature of the history was the seasonal incidence of the symptoms, which had occurred every year from May to September. At other times of the year he would consider himself to be in good health. Four weeks before admission for investigation he had an episode of pain in the right iliac fossa which settled rapidly with mild analgesics.

He was diagnosed as having had sarcoidosis in 1959 following a routine mass chest X-ray. This had revealed massive bilateral hilar lymphadenopathy and a tuberculin test was negative at 1/1000. He was treated with cortisone acetate and isoniazid from 1959 to 1964. A random serum calcium at the end of treatment in 1964 was 11·0 mg/100 ml.

Examination revealed a tall sallow man with grossly injected conjunctiva. There were scleral plaques encroaching on to the cornea in both eyes. The liver and spleen were impalpable and there was no clinical evidence of lymphadenopathy.

Investigations showed:
Haemoglobin 13·1 g%; white cell count 4800/mm³; E.S.R. 22 mm/hr; serum calcium 14·4 mg/100 ml; serum phosphate 4·5 mg/100 ml; urea 116 mg/100 ml; sodium 136 mmol/l; potassium 4·1 mmol/l; bicarbonate 28 mmol/l; alkaline phosphatase 8 K.A. units. Plasma proteins: total 7·8 g/100 ml; albumin 4·3 g/100 ml; globulin 3·5 g/100 ml.

Electrophoresis showed a polyclonal gammapathy consistent with sarcoidosis. Serum IgA = 300% of mean normal average; serum IgG = 260% of mean normal average; serum IgM = 260% of mean normal average. The M.S.U. showed scanty red cells but was sterile. 24 Hour urine calcium = 510 mg%; 24 hour urinary phosphate = 1220 mg%. The chest X-ray was normal.

The intravenous pyelogram showed poor concentration on both sides, with delayed excretion on the right and some dilatation of the right renal pelvis. Retrograde studies confirmed the presence of a right ureteric calculus, which was removed at ureteric lithotomy.

X-rays of skull, hand and jaw showed no evidence of bone resorption or cysts. A serum parathormone estimation, 10 days before surgery when the serum calcium was 13·7 mg/100 ml, was less than 0·1 ng/ml. Serial estimations of serum calcium and blood urea showed a progressive fall after surgery (Fig. 1). The serum 25-hydroxycholecalciferol was within normal limits.

Discussion
The most unusual feature of this case was the clear-cut seasonal nature of the symptoms recurring every May to September, from 1964 to 1973. The original diagnosis of sarcoidosis in 1959 was based on the findings of bilateral hilar adenopathy on a chest X-ray and a negative Mantoux. Steroids were given until 1964. It was not until the steroids were withdrawn at a time when the only known recorded serum calcium was 11·0 mg/100 ml that the recurring pattern of polydipsia, polyuria, lethargy and the painful red eyes developed each summer. The latter symptoms were probably due to metastatic crystallization of calcium and phosphate and hydroxyapatite in the conjunctiva (Berlyne and Shaw, 1967). ‘Red eyes’ in sarcoidosis may also be due to iridocyclitis, phlyctenular conjunctivitis, but are nearly always associated with acute or chronic active disease (James, 1959).
Hypercalcaemia is a well recognized complication of sarcoidosis (Dent, 1970). The mechanism has been attributed to bone lesions, disturbance of parathyroid activity, protein abnormalities, but the majority of cases are due to abnormal sensitivity to normal amounts of vitamin D (Bell, Gill and Barrter, 1964). 1,25-Dihydroxycholecalciferol, the metabolically active end product of vitamin D metabolism, is not present in increased amounts in the serum, so it is suggested that the small bowel enterocytes develop increased sensitivity with enhanced calcium absorption. If additional precursors however are supplied in the form or oral vitamin D, or the patient is exposed to ultra violet light, then there will be an even further increase in the serum calcium levels (Dent, 1970). It has been shown in a retrospective study that the incidence of hypercalcaemia in sarcoidosis varies according to the latitude, from
10% in Great Britain, to 20–30% in the U.S.A., rising to 40% in Cape Town, South Africa (Taylor, Lynch and Wyssor, 1963). In 345 patients with sarcoidosis the incidence of hypercalcaemia (serum calcium >11.0 mg%) was lowest at 5.5% in March, rising to 37.8% in August. The explanation was thought to be varying exposure to significant amounts of ultra violet light. The wavelengths essential for converting 7-dehydrocholesterol, present in the lipids of the skin, to cholecalciferol are 256–313 nm, and these occur in this country from May to September, and the amount is directly related to the hours of sunshine (Wisley Meteorological Office personal correspondence). In order to prove that the patient’s hypercalcaemia was indeed due to sensitivity to ultra violet light, he was given a total body exposure of 22 min from a Uvester machine over 5 days (Fig. 2). The serum calcium rose from 11.4 to 15.3 mg% and peaked at the fifteenth day, when typical symptoms returned. There was a sharp fall in the serum calcium, with cortisone acetate 50 mg t.d.s. A further exposure to a similar dose of ultra violet light 2 months later while still on cortisone acetate failed to produce any change in the calcium levels (Fig. 3).

The alternative possible mechanism for the hypercalcaemia would be hyperparathyroidism. Winnacker et al. (1969) reported one case and collected eleven others from the world literature of parathyroid adenomas in association with sarcoidosis, and a further case was reported by Behnen et al. in 1971. MacGregor (1973) has claimed that immunological changes similar to those that can induce thyroid overactivity may exist in sarcoidosis, initiating hyperplasia in the parathyroids, leading ultimately to adenomatous formations. Against this hypothesis in this case were the very low levels of serum parathormone (Fig. 1) at a time when the serum calcium was raised and the prompt and sustained suppression of the serum calcium with cortisone. This accords more with the findings of Cushard et al. (1972), who found unmeasurably low serum parathormone levels in eight cases of active sarcoidosis, in nine of eleven cases of inactive sarcoidosis, but normal levels of serum parathormone in five of seven active cases when treated with prednisone.

This patient was followed closely throughout the summer of the following year and hypercalcaemia was avoided with only cortisone acetate 50 mg daily. During the month of September his cortisone was stopped and subsequent serum calcium values have remained normal. The problem remains whether this mechanism will recur in future years and it is proposed to follow the serum calcium during the beginning of each summer, and restart cortisone in the event of further hypercalcaemia.

Acknowledgments

Uretero-lithotomy was performed by Mr F. A. W. Schweitzer. Estimates of 25-hydroxycolecalciferol were made by Dr D. E. Lawson, Cambridge.

References


Inflammatory fibroid polyp of the ileum—a rare cause of intussusception

J. C. McGregor
M.B., Ch.B., B.Sc., F.R.C.S.

Departments of Surgery and Pathology, Stobhill General Hospital, Glasgow

Summary

A case of ‘inflammatory fibroid polyp’ in the terminal ileum is described. It occurred in a 38-year-old female and was associated with an ileo-ileo-intussusception presenting as an acute intestinal obstruction. The macroscopic and microscopic features of this rare lesion are illustrated. It would appear to be an entity which may have been confused in the past with the haemangiopericytoma.

Case history

A 38-year-old woman was admitted to Stobhill General Hospital, Glasgow, as an emergency with a history of abdominal colic and vomiting over a period of 12 hr. She had been in good health and had had no previous operations or illness. On admission, a soft but definite swelling was noted in the right iliac fossa. It was decided that laparotomy should be performed.

Operative findings

The abdomen was opened through a right paramedian incision. The mass noted before operation proved to be an ileo-ileo-intussusception through the ileo-caecal valve into the caecum and ascending colon. The intussusception was reduced with difficulty and the cause was found to be a polypoid lesion of the ileum about 20 cm from the ileo-caecal valve. No lymph node enlargement was noted in the mesentery. A resection of approximately 6 cm of ileum, containing the polypoid structure, was performed and end-to-end anastomosis accomplished.

Post-operative progress

The patient remains well to date, almost 3 years after operation.

Pathology

A segment of ileum, approximately 6 cm in length, with a narrow strip of mesentery attached was examined. The serosa was congested. At one place, the wall of the bowel was necrotic and a pedunculated nodule, 2-8 cm in diameter, protruded through. The ileum was constricted at the base of the nodule, and the wall of the gut at this point was pulled inwards (Fig. 1). The lesion on the cut surface was greyish-white in colour and appeared to consist of a firm oedematous stroma.

Microscopically, the nodule consisted of a very oedematous fibrous stroma containing numerous small blood vessels and chronic inflammatory cells (lymphocytes, plasma cells and eosinophils). The muscle fibres of the muscle coat of the bowel wall were separated owing to oedematous fibrous tissue between them (Fig. 2). Reticulin stain showed fine reticulin fibres and accentuated the presence of several vessels (Fig. 3). The histological appearances were consistent with those of the ‘inflammatory fibroid polyp’ described by Helwig and Ranier in 1953.

Discussion

It is well recorded in the literature that intussusception in the adult is an uncommon condition. Donhauser and Kelly (1950) collected 665 cases reported in English and American literature from
