

severe vaginal discharge and recurrent labial abscesses, she agreed to an examination under anaesthetic, and a rectovaginal fistula was identified. She refused surgical excision of the rectum and was treated with oral prednisolone.

The patient was re-admitted to hospital as an emergency in August 1976 with a three-day history of malaise, rigors, suprapubic pain, and four months' amenorrhoea. Her temperature was 39.0 C and pulse rate 112/minute. There was definite lower abdominal tenderness but no evidence of peritonitis. Investigations disclosed a haemoglobin of 9.7 g/dl and a white cell count of $16 \times 10^9/l$. Plain x-ray films of the abdomen showed a pelvic soft tissue mass and in the erect position a fluid level in what appeared to be a pelvic abscess. An examination under anaesthetic was performed before laparotomy, when a suprapubic mass was palpated, arising out of the pelvis. At operation this mass was found to be a large intrauterine abscess and there was no evidence of any other pelvic abscesses. There were extensive pelvic adhesions from the previous surgery. The abscess was drained by opening and marsupialising the fundus of the uterus, the edges being sutured to the lower end of the abdominal incision, and rapid symptomatic improvement followed. A gastrografin enema performed on the fifth postoperative day showed a long stricture in the pelvic colon with a fistulous communication between the upper rectum and the uterus (fig), the latter containing faeces. No rectovaginal fistula was demonstrated. A defunctioning transverse colostomy was performed five days later. After this procedure, the discharge from the uterine cavity gradually diminished and the drainage track closed within three weeks. There has been no overt reassertion of the uterine sepsis.

Discussion

The proximity of the sigmoid colon and rectum to the vagina is generally held to be responsible for the high incidence of rectovaginal fistulae in colonic Crohn's disease. Probably the greater thickness of the uterine wall precludes the development of a rectouterine fistula. Nevertheless, colonic surgery had been performed twice in this patient—initially a sigmoid colectomy and later a colorectal anastomosis—and perhaps this was the predisposing factor in the development of the rectouterine fistula.

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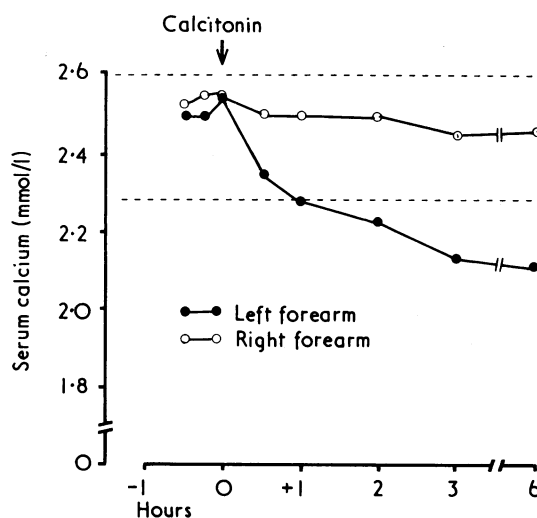
Post-traumatic reflex sympathetic dystrophy syndrome (Sudeck's atrophy): effects of regional guanethidine infusion and salmon calcitonin

Patients with reflex sympathetic dystrophy syndrome (RSDS)¹ develop a localised high-turnover osteoporosis due to increased osteoclastic resorption, partly stimulated by immobilisation, and dependent on the presence of an intact thyroid and parathyroid. The affected hand is painful, swollen, and moves poorly, with trophic skin changes and vasomotor instability. Calcitonin may relieve bone pain and reduce increased osteoclastic activity in patients with Paget's disease of bone.² Guanethidine has been used to produce local sympathetic blockade in many conditions.³ As RSDS comprises increased osteoclastic activity and sympathetic dysfunction, we investigated both calcitonin treatment and guanethidine blockade in a patient with post-traumatic RSDS (Sudeck's atrophy).

Case report

A 35-year-old lorry driver had his left hand crushed in December 1975. There were no fractures. After an initial period of recovery, the hand became increasingly painful and swollen. When seen in April 1976, his hand was immobile and swollen, and the skin was white with blue mottling. There was excessive palmar sweating and tenderness of the metacarpophalangeal and proximal interphalangeal joints. The fingers were held in flexion and could only bend a few degrees. The clinical diagnosis of RSDS was confirmed by the radiographic appearances of widespread patchy osteoporosis. He had physiotherapy but did not improve, and was therefore started on salmon calcitonin treatment (Calsynar; Armour Pharmaceutical Co Ltd), 50 MRCU twice daily. Before the first injection a bone scan was performed using Tc-labelled ethane hydroxydiphosphonate (EHDP), which showed an increased uptake in the affected hand.

The calcitonin produced an immediate reduction in the serum calcium concentration of blood taken from the left forearm. No fall in serum calcium was observed in blood taken simultaneously from the right side (figure).



Serum calcium concentrations before and after a single intramuscular injection of salmon calcitonin 50 MRCU. Samples were obtained simultaneously from catheters in left and right median cubital veins. Serum calcium was measured by atomic absorption spectrophotometry.

Conversion: SI to traditional units—Calcium 1 mmol/l \approx 4 mg/100 ml.

After one month's treatment no clinical improvement was observed, although there was a considerable reduction in the uptake of EHDP in the affected left hand. We then induced blockade with guanethidine, using the technique of Hannington-Kiff.³ Within 12 hours the hand was much less swollen, had returned to its normal colour, and the hand and metacarpophalangeal joints were mobile and pain-free. Nevertheless, the middle and ring fingers remained white, immobile, and painful; hence five weeks later the procedure was repeated using a more distal injection. This produced a considerable and lasting improvement in the colour, range of movement, and level of pain in the two affected fingers.

Comment

Regional intravenous infusions of guanethidine produced a striking clinical improvement in this patient. RSDS may be a reflex-arc phenomenon, the efferent pathway being postganglionic fibres that are blocked by guanethidine. This blockade is sustained and is more complete than surgical sympathectomy, which is usually disappointing in RSDS. The absence of symptomatic improvement during the administration of salmon calcitonin was disappointing, as excellent results have been reported in patients with RSDS⁴ with the use of pig calcitonin, which may account for the difference. Salmon calcitonin did produce an immediate reduction in bone resorption, however, shown by the fall in serum calcium in the blood taken from the affected limb.⁵ This confirms the presence of an increase in osteoclastic bone resorption in RSDS. Inhibition of bone resorption persisted during the administration of calcitonin, as shown by a quantitative reduction in the uptake of labelled EHDP in the second bone scan. Our observations suggest that guanethidine may be a valuable therapeutic agent in patients with established RSDS. In our experience,

salmon calcitonin is unlikely to produce symptomatic relief of the RSDS but might prevent bone mineral loss.

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Gamma-glutamyltransferase levels in ascitic fluid and liver tissue from patients with primary hepatoma

The diagnosis of primary hepatoma, particularly in patients with underlying liver disease, may be difficult and delayed. The most sensitive test—measuring serum α -foetoprotein—may yield both false-negative and false-positive results, depending on the method of estimation and the age or ethnic group of the patients.¹

We report here observations that show that the estimation of γ -glutamyltransferase levels in ascitic fluid may be a useful adjunct in the diagnosis of primary hepatoma.

Patients and results

Ascitic fluids from 31 patients were studied. Five patients had hepatoma; nine had cirrhosis; five had chronic liver disease (three chronic active hepatitis, one alcoholic hepatitis, one Budd-Chiari syndrome); five had secondary carcinoma (two stomach, one pancreas, one bronchus, one carcinoid); three had chronic serositis due to systemic lupus erythematosus; and four had miscellaneous diagnoses (one acute pancreatitis; one intestinal lymphangiectasia; one congestive cardiac failure; one nephrotic syndrome). Ascitic fluid was collected during routine diagnostic peritoneal tap and a portion was frozen at -20°C until assay. γ -Glutamyltransferase activity was estimated fluorimetrically² and protein was assayed by the Lowry procedure.³

The table shows the levels of γ -glutamyltransferase in ascitic fluid from the 31 patients. The five patients with hepatoma had highly significantly raised levels of enzyme activity compared with all the other groups and there was no overlap of the range of values. These patients all had circulating α -foetoprotein detectable by immunodiffusion and the liver biopsies showed hepatoma with cirrhosis. The patients with cirrhosis could be subdivided, clinically and histologically, into two subgroups: those with inactive cirrhosis and those with cirrhosis associated with considerable macronodular regeneration and nuclear dysplasia. Patients in the latter group had significantly higher levels of the enzyme in the ascitic fluid than those with inactive

γ -Glutamyltransferase levels in ascitic fluid in seven groups of patients

| Diagnosis | No of patients | Enzyme activity (mU/ml) | |
|-------------------------|----------------|-------------------------|-------------|
| | | Mean \pm SE | Range |
| Primary hepatoma | 5 | 33.5 \pm 5.0 | 17 – 56 |
| Inactive cirrhosis | 5 | 0.86 \pm 0.40 | 0.46 – 1.4 |
| Cirrhosis and dysplasia | 4 | 6.29 \pm 2.4 | 3.5 – 8.5 |
| Secondary carcinoma | 5 | 2.44 \pm 2.1 | 1.2 – 3.5 |
| Serositis (SLE) | 3 | 1.04 \pm 1.1 | 0.66 – 1.48 |
| Chronic hepatitis | 5 | 3.2 \pm 2.1 | 0.21 – 3.5 |
| Miscellaneous | 4 | 2.72 \pm 1.1 | 0.57 – 4.8 |

cirrhosis (table I). The levels of γ -glutamyltransferase activity (mean (\pm SE) mU/mg protein) in liver tissue from nine controls (2.93 ± 1.1), 16 patients with cirrhosis (15.2 ± 2.1), and five patients with cirrhosis in whom part of the biopsy specimen was infiltrated with hepatoma (35.5 ± 5.1) indicated a correlation between liver and ascitic fluid enzyme levels.

Comment

Our findings indicate that assay of γ -glutamyltransferase in ascitic fluid may be a useful investigation in diagnosing hepatoma. The enzyme is probably released into the ascitic fluid from hepatic tissue. Patients with cirrhotic livers in which there was evidence of active cellular regeneration had raised enzyme activities in both ascites and liver tissue, which suggests that the increased enzyme activity is related to cellular proliferation.

Studies in experimental animals have shown raised levels of γ -glutamyltransferase in a wide variety of liver tumours.⁴ Study of γ -glutamyltransferase, as well as having diagnostic implications, may therefore throw light on the fundamental processes occurring in cellular proliferation and the development of malignancy.⁵

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