Mean (SEM) concentrations of growth hormone, insulin, and glucose over 24 hours with each dose regimen. For statistical analysis (Student's paired t test) growth hormone and insulin concentrations were log transformed

	Dose of octreotide (μg thrice daily)			
	Control	100	500	1000
Growth hormone (mIU/l):				
24 h Profile	40 (18)*	8·5 (3·2)†	3·8 (0·5)	3·1 (0·4)
10 h After dose	45 (16)*	17·7 (4·0)‡	5·2 (0·6)§	2·8 (0·2)
Insulin (mU/l):				
24 h Profile	33 (7·1)*	17 (3·7)†	12·7 (3·0)	10·6 (1·5)
Glucose (mmol/l):				
24 h Profile	5·2 (0·3)	5·3 (0·2)	5·5 (0·2)	5·4 (0·2)

*Control *v* 100, 500, and 1000 μg $p<0·001$.
†100 *v* 1000 μg $p<0·05$.
‡100 *v* 500 μg $p<0·05$.
§500 *v* 1000 μg $p<0·02$.

concentration with any of the doses. Growth hormone concentration was within normal limits 10 hours after 1000 μg octreotide but not after 100 or 500 μg. Daily measurements of growth hormone concentration showed no change on each of the three days of each dose regimen.

Twenty four hour profiles obtained in the four patients on the last day of the long term study did not differ from those obtained in the acute study at this dose.

No patient experienced subjective or objective side effects while taking octreotide. There was no change in blood count, biochemical profile, or thyroxine, cortisol, prolactin, luteinising hormone, follicle stimulating hormone, and sex hormone concentrations at the highest dose.

Comment

Several studies have indicated that octreotide is an effective treatment for acromegaly, although in the recommended dose (50-100 μg thrice daily) it is unsuccessful in suppressing growth hormone concentrations throughout the interval between two injections.[2 5] Our data[2] and those of others[4] have shown that after 100 μg subcutaneously suppression of growth hormone is maximal at two to four hours. Timsit *et al* reported that 500 μg thrice daily given subcutaneously did not normalise growth hormone in one of two subjects studied.[5] They indicated that continuous subcutaneous infusion of octreotide (100 μg/24 h) normalised growth hormone throughout the day in six of seven patients studied. Our study confirms that subcutaneous octreotide in doses of 1000 μg thrice daily can normalise growth hormone concentration in acromegaly. Indeed, in all six patients in our study the mean 24 hour growth hormone concentration was normal with the highest dose used and there was no evidence that growth hormone concentration increased between doses, as it did with the 100 and 500 μg doses.

It has been reported that octreotide may worsen glucose tolerance in acromegaly by suppressing plasma insulin concentrations.[2 3] Our study confirmed that the reduction in insulin concentration was greater with 1000 μg than 100 μg thrice daily. Nevertheless, in both the short and long term studies there was no evidence of an appreciable deterioration in 24 hour plasma glucose concentration with any of the dose regimens, which might be due to a simultaneous greater reduction in counterregulatory factors enhancing insulin sensitivity. Previous studies of low dose subcutaneous octreotide have indicated that the drug is well tolerated. Although further long term data are necessary, our study suggests that higher doses are also without important side effects.

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Dialysis myelopathy: quadriparesis due to extradural amyloid of β_2 microglobulin origin

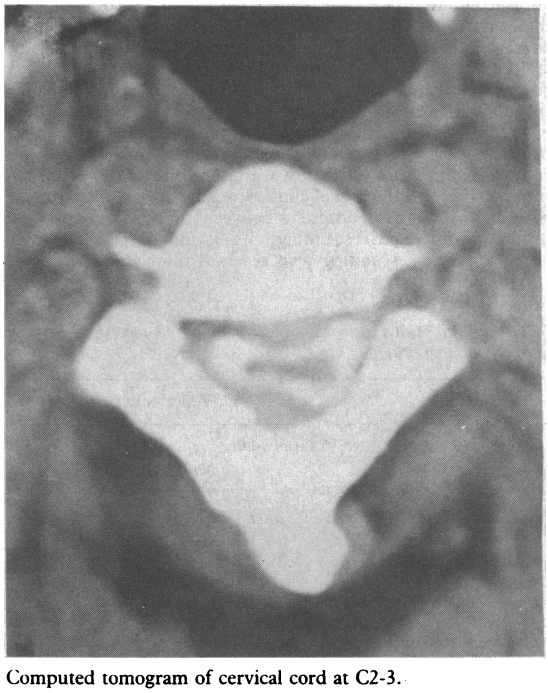
We report a case of cervical myelopathy due to extradural deposition of amyloid derived from β_2 microglobulin. Posterior cervical laminectomy resulted in considerable improvement.

Case report

A 47 year old West Indian man was admitted for investigation of a four month history of progressive stiffness and weakness of his arms and legs and numbness of the lower half of his body. He had started receiving haemodialysis in 1970. In 1978 he developed hyperparathyroidism necessitating parathyroidectomy. Subsequent dialysis arthropathy was confirmed by the presence of synovial amyloid derived from β_2 microglobulin in the right knee. In 1985 he received a cadaver renal transplant but developed chronic rejection, and he resumed haemodialysis nine months after transplantation. In 1986 biopsy of a cyst in the clavicle showed deposition of amyloid derived from β_2 microglobulin.

When admitted to hospital he was unable to walk, move from a chair to bed, or hold a pen to write. Examination showed a spastic quadriparesis with pronounced rigidity, hyperreflexia, and extensor plantar reflexes. Joint position sense was reduced, and the response to pin prick was reduced below the upper thorax. Myelography showed posterior displacement of the thecae at the sacrum, L3-5, and T7. There was almost complete obstruction to flow of contrast medium from T1 to C2. Computed tomography of the cervical region showed widespread extradural soft tissue densities with almost total obliteration of the subarachnoid space at C5-6. The cord was noticeably compressed (figure).

Posterior cervical laminectomy was performed. The spinal cord was completely surrounded by concentric rings of yellow fibrous tissue, which was removed. Histological examination showed extensive extracellular deposits of amyloid within fibroelastic ligament. Immunoperoxidase stains were positive for β_2 microglobulin but negative for serum amyloid A proteins and κ and λ light chains. Postoperative recovery was good. He could walk and climb stairs, and sensation returned to normal.



Computed tomogram of cervical cord at C2-3.

Comment

Compression of the spinal cord due to extradural amyloid is rare.[1 2] In previous cases no primary cause for the formation of amyloid was found, although monoclonal gammopathy was implicated in one report.[2] This is the first reported case of compression of the cord due to extradural deposition of amyloid derived from β_2 microglobulin.

Dialysis arthropathy, bone cysts, and recurrent carpal tunnel syndrome due to deposition of amyloid are recognised complications of long term haemodialysis.[3] Biochemical and immunohistochemical studies have identified the precursor molecule of the amyloid as β_2 microglobulin. β_2 Microglobulin concentrations are raised in patients undergoing dialysis

with conventional cuprophane membranes.[4] Haemodialysis with high flux dialysers and polysulfone or polyacrylonitrile membranes lowers β_2 microglobulin concentrations, and an improvement in shoulder pain in patients changed to high flux dialysers has been reported.[5] The mechanism of the improvement is not clear; possibly amyloid is no longer deposited and the associated inflammation decreases. The improved biocompatibility of these membranes is known to be associated with reduced activation of some mediators of the inflammatory response.

Our patient used polysulfone dialysers after his operation, and his initial improvement was maintained. Monitoring the amyloid deposits throughout his spinal canal should show the effect of high flux dialysis on further deposition of amyloid.

We thank Dr M Owen, who performed the myelography; Dr D Sethi for advice; and Dr J M Rice-Edwards, who performed the laminectomy.

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Strongyloidiasis in ex-Far East prisoners of war

Altogether 38 000 men who had been prisoners of war in the Far East returned to Britain after the second world war. There has recently been growing concern that some of those surviving might still be harbouring the tropical worm *Strongyloides stercoralis*. In 1982 the Department of Health and Social Security agreed to mount a nationwide screening programme and recruited 11 hospitals, seven of them military. The programme was named the tropical disease investigation and was organised by the department's War Pensions Branch, which assigned these former prisoners of war to the hospitals nearest to their homes. I report on the first 500 patients screened at this hospital.

Patients, methods, and results

From April 1982 up to four patients a week were admitted to this hospital for five days of investigations. Their ages ranged from 59 to 81. All patients underwent routine screening for tropical diseases and had a full medical and psychiatric examination with appropriate investigations. Some further tests were aimed specifically at strongyloidiasis: these consisted of a differential white cell count, stool tests, and a string test (Entero test).[1]

Strongyloidiasis was identified in 78 of the first 500 subjects tested. Seventy three had a convincing history of classical larva currens rash, and five were asymptomatic but positive for larvas on stool testing. All 78 were treated with thiabendazole 25 mg/kg twice daily for three days. Three patients with a history of rash did not complete the treatment. A minimum of 12 months later we wrote to the 70 patients with symptoms. Of the 64 who replied, 38 claimed to be cured. Because of the unpleasant side effects of thiabendazole only 15 of the remaining 26 agreed to further treatment. Four were considered to be cured 12 months after their second course of thiabendazole. Four of the five asymptomatic patients were reviewed in hospital one to three years after treatment. Three were found to be negative for the larva on stool testing and had normal eosinophil counts; they were judged to be cured. Thus 45 of the 68 patients (66%) reviewed 12 months or more after the initial treatment were found to be free of infection.

Comment

Patients with chronic strongyloidiasis often have few symptoms other than mild looseness of the bowels. The larva currens rash, an intensely irritating recurrent urticarial eruption, is usually unmistakable and is diagnostic, especially when accompanied by eosinophilia. In most long established cases this rash tends to recur at long intervals. In many patients it may be little more than an inconvenience.

The chief danger to life is the hyperinfection syndrome, in which the immune defences are overwhelmed and there may be massive dissemination of larvas from the general circulation to vital organs, possibly with a fatal outcome.[2] The syndrome may be provoked by certain malignancies and chronic debilitating diseases, including the acquired immune deficiency syndrome.[3] Immunosuppressant drugs such as high dose steroids are an important cause of the hyperinfection syndrome.

Our cure rate was 66%; as thiabendazole produces unpleasant side effects a less toxic and more effective drug is needed.[4] This hospital now offers a second course of treatment a month after the first.

Strongyloidiasis may run a mild or asymptomatic course: five patients positive for larvas on stool testing had no symptoms. Thirteen patients who did not receive treatment had unexplained eosinophilia. Thus the prevalence of infection reported here (16%) may be an underestimate; 20%, as suggested by Gill and Bell, may be more realistic.[5] As strongyloidiasis may be becoming more common in Britain doctors intending to treat their patients with immunosuppressant drugs should ask whether they were prisoners of war in the Far East or have lived in the tropics. Unexpected reactions to treatment with immunosuppressants could necessitate a life saving course of treatment.

The 11 hospitals taking part in the Tropical Disease Investigation are the Royal Liverpool Hospital; London School of Tropical Medicine; City Hospital, Edinburgh; Coppetts Wood Hospital, London; Royal Naval Hospital Haslar, Gosport; Royal Naval Hospital, Plymouth; Queen Elizabeth Military Hospital, Woolwich, London; Princess of Wales Royal Air Force Hospital, Ely; Princess Mary's Royal Air Force Hospital, Halton, Aylesbury; Princess Alexandra Hospital, Wroughton, Swindon; and Royal Air Force Hospital, Nocton Hall, Lincolnshire.

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Laparoscopic incisions at the lower umbilical verge

When punctured with a cone skin splits along the direction of its collagen bundles; the topographical alignment of these fibres is commonly referred to as Langer's lines.[1] Incisions along these lines are believed to heal with less formation of keloid than incisions crossing the lines.[2,3] If Langer's lines run vertically at the lower umbilical verge vertical incisions here should be cosmetically superior to horizontal incisions. We carried out a study to test this.

Patients, methods and results

The study was in two parts, the first being to determine which incisional axis, horizontal or vertical, would produce the best cosmetic result and the second to determine the direction of Langer's lines at the lower umbilical verge. We obtained the approval of the local ethical committee and the participating patients' informed consent for the study.

Twenty women undergoing laparoscopy for the first time were allocated alternately to receive a vertical or horizontal incision. A number 11 scalpel blade and a 7 mm operating laparoscope were used; incisions were closed with a single 2-0 plain catgut subcuticular horizontal mattress suture. Eighteen women were available for review three months later and used a 10 cm visual analogue scale to assess the cosmetic result of their scars. The women with vertical scars graded the result as 7·6, 8·2, 8·4, 9·1, 9·8, 10, 10, 10, and 10 (total 83·1, median 9·8); the nine with horizontal scars graded the result as 3·6, 4·3, 4·7, 5·1, 5·3, 6·5, 6·9, 7·1, and 10 (total 53·5, median 5·3). The medians were significantly different ($p<0·01$, Wilcoxon double sided rank sum test).

The direction of Langer's lines at the lower umbilical verge was determined by two methods. Firstly, Langer's skin splitting experiment[1] was recreated in 10 women, whereby a cone shaped trocar was used to pierce the skin at the lower