Comment

Our findings show that higher concentrations of lactate occur in septic bursal fluid when compared with non-septic samples. The series also included a non-infected specimen with an unexplained high lactate value, and this parallels the results of other workers[1-5] with other body fluids. For example, in a recent study of over 300 synovial fluid samples[2] raised concentrations were recorded in 13 out of 56 cases of rheumatoid arthritis and four out of 58 cases of osteoarthrosis. Normal values were not found in any untreated septic specimen, and this was also true in our study.

The UV lactate test is simple to perform and gives a result in 15-20 minutes at a cost of 40p per test. It is thought that its value lies in the rapid exclusion rather than the diagnosis of sepsis, and it can be usefully performed before the administration of local treatment.

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Nuffield Department of Orthopaedic Surgery, Nuffield Orthopaedic Centre, Oxford OX3 7LD
RAYMOND J NEWMAN, BSC, FRCS, MRC training fellow and honorary senior registrar

Department of Bacteriology, John Radcliffe Hospital, Oxford OX3 9DU
GORDON D W CURTIS, FIMLS, senior chief medical laboratory scientific officer
MARY P E SLACK, MA, MRCPATH, university lecturer and honorary consultant

Correspondence and requests for reprints to: Mr Raymond J Newman.

Ineffectiveness of haemodialysis in atropine poisoning

Poisoning with atropine is uncommon but has recently been reported in children given atropine methonitrate drops[1] and may occur after use of eye drops, ingestion of plants containing belladonna alkaloids, or errors in prescribing or dispensing and in cases of deliberate self poisoning. The anticholinergic effects of atropine are evident both centrally and peripherally, and individual susceptibility is extremely variable, death having been recorded after as little as 100 mg and recovery after as much as 1 g.[2] We recently treated a patient who took about 300 mg atropine as a result of a series of errors and who presented with signs of severe atropine poisoning. In view of the considerable overdosage that had occurred and the florid features of atropine poisoning we attempted to remove the drug by haemodialysis. We report here the outcome.

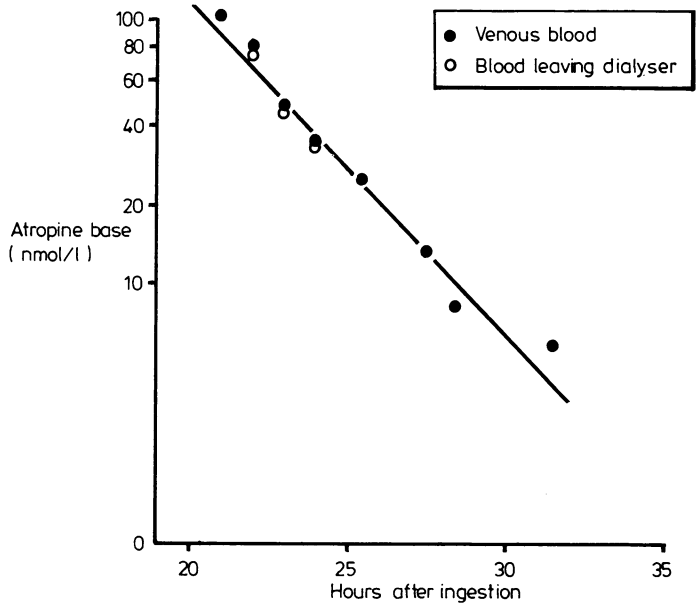
Case report

A 27 year old woman who had had a duodenal ulcer confirmed by barium meal three months previously had been prescribed magnesium trisilicate mixture and atropine sulphate for abdominal pain. As a result of an error in dispensing and her own overtreatment she ingested about 300 mg atropine. She rapidly developed symptoms and was admitted to hospital, where she was found to be agitated, feverish, and hypertensive with a dry mouth and dilated pupils. She developed acute retention of urine and required catheterisation. Initial treatment consisted of sedation (with diazepam and paraldehyde) and neostigmine 2·5-5·0 mg every three hours, after which she was transferred to be considered for haemodialysis.

On admission she was conscious and coherent, although speech was slurred and slow. There was occasional muscle clonus with generalised hyperreflexia, bilaterally upgoing planter reflexes, and fixed, dilated pupils. Blood pressure was 130/90 mm Hg and pulse 92 beats/min. Her mouth was very dry, but there were no abnormal abdominal findings other than infrequent bowel sounds. Initial investigations showed haemoglobin concentration 7·9 g/dl with normal white cell count and platelets, and normal renal function (creatinine concentration 80 μmol/l (0·9 mg/100 ml)). She was treated with physostigmine 2 mg intramuscularly or intravenously every one to two hours, forced diuresis, and haemodialysis (four hours with a Gambro Lundia 1 m^2 dialyser and blood flow rate of 192 ml/min; started 21 hours after ingestion of atropine).

There was no striking improvement immediately after dialysis, but the next day the muscle clonus had improved and plantar responses were equivocal, although her pupils remained fixed and dilated and the reflexes brisk. Improvement continued over the next three days, and she was free of the effects of atropine 96 hours after ingestion.

The plasma atropine concentrations in the first two hours of dialysis showed a gradient across the dialyser of 10%, corresponding to a clearance of about 20 ml/min. Dialysis did not, however, appear to have an appreciable effect on the plasma rate of decay of atropine since all the results, including the predialyser values taken during dialysis, had a correlation coefficient of 0·99, as shown on a semilog plot (figure).



Plasma decay curve on semilog plot.
Conversion: SI to traditional units—Atropine base: 1 nmol/l ≈ 289 ng/l.

Comment

Atropine sulphate has a molecular weight of 695 and is well absorbed from the gastrointestinal tract, rapidly distributed throughout the body, and both metabolised by the liver and excreted in the urine (94% of an injected dose appears in the urine within 24 hours, 33-50% as the parent drug and the remainder as metabolites).[3 4] The drug's poor clearance may be related to the fact that 50% is protein bound,[4] but the ineffectiveness of dialysis in the overall elimination of atropine is probably a result of the drug's large apparent volume of distribution (2-4 litre/kg)[4 5] and rapid metabolism and excretion by liver and kidneys.[4] Indeed, in this patient the half life of atropine was roughly two and a half hours, which contrasts with other reported values of 13-38 hours.[3] The only other report of haemodialysis in atropine poisoning, albeit in a moribund patient,[5] also showed the procedure to be ineffective, and we would therefore conclude that haemodialysis has no place in the management of atropine poisoning. Other patients with atropine poisoning after ingesting between 200 and 700 mg have been successfully treated with physostigmine,[2] and it was probably adequate treatment with a centrally acting cholinesterase inhibitor together with other routine supportive measures, rather than haemodialysis, that resulted in the successful outcome in this patient.

We thank Helen Remington, of the pharmacy department, for her help; Dr R F Metcalf, Chemical Defence Establishment, Porton Down, for measuring the atropine concentrations; Dr D G Leitch, of Scunthorpe General Hospital, for referring the patient; and the Yorkshire Kidney Research Fund for its support.

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Department of Renal Medicine, St James's University Hospital, Leeds LS9 7TF
D P WORTH, MB, MRCP, registrar
A M DAVISON, MD, FRCP, consultant renal physician
T G ROBERTS, MB, MRCP, registrar
A M LEWINS, SRN, nursing officer

Correspondence to: Dr A M Davison.

Chronic graft versus host disease presenting with polymyositis

Chronic graft versus host disease after bone marrow transplant affects many organ systems, particularly the skin, upper gastrointestinal tract, eye, and liver.[1 2] It can also cause syndromes akin to collagen vascular disease,[2 3] suggesting a common pathogenesis.

We report a patient who developed polymyositis as the only manifestation of chronic graft versus host reaction seven months after bone marrow transplant.

Case report

An 11 year old boy presented with acute lymphoblastic leukaemia in January 1977 and after treatment with the UKALL V (United Kingdom Acute Lymphoblastic Leukaemia (trial) V) regimen remained in remission until January 1980. A second remission was achieved with the same regimen. In January 1981 he again relapsed and remitted a third time, but the course was complicated by herpes zoster which responded to acyclovir.

An HLA matched, mixed lymphocyte culture non-reactive bone marrow transplant from his mother was performed in April 1981. Pregraft preparation included methyl prednisolone, vincristine, zoster immune globulin, and oral amphotericin followed by cyclosporin A, cyclophosphamide, and total body irradiation. The graft contained $3{\cdot}5 \times 10^8$ nucleated cells/kg and graft reconstruction showed 500 neutrophils on day 20 and 1000 neutrophils on day 31. Chromosomes were 100% female. Graft versus host prophylaxis after bone marrow transplant included methotrexate and cyclosporin A.

On day 7 after the bone marrow transplant he had an infection over the site of the deep intravenous line, which improved after treatment with antibiotics and one unit of buffy coat cells, and on day 8 he developed oral herpes which responded to acyclovir and zoster immune globulin. On day 10 he developed acute graft versus host disease with pyrexia and shivering, a rash on his face, palms, soles, legs, and trunk, and loose stools. This responded to intravenous hydrocortisone and eight days' treatment with oral prednisolone. On day 35 his symptoms recurred and responded to prednisolone given for three days. He was discharged from the bone marrow transplant unit taking maintenance cyclosporin A and oral amphotericin and returned to normal activities. By September 1981 he was no longer taking any medication, back at school, and in good health.

In November 1981 he had an upper respiratory tract infection followed by swelling of his ankles and inability to straighten his arms. Over the next week he became too weak to run, jump, or get up from the floor and had extreme muscle tenderness. Bone marrow showed no relapse. Serum creatine kinase activity was 1750 IU/l (normal < 200 IU/l) and he was referred to our muscle clinic. He was generally unwell and miserable. His skin was dry but without rash or discoloration. He had no breathing or swallowing difficulties. He could get up from a low chair, walk, and climb stairs but had difficulty in getting up off the floor and could not hop on one leg. The calves were tender. There were flexion contractures of the elbows and mild pitting oedema of the ankles.

The clinical features were typical of childhood dermatomyositis but without apparent skin manifestations. The serum creatine kinase activity was 3950 IU/l; the electromyogram was abnormal with fibrillation potentials and a high proportion of polyphasic complexes, and needle biopsy of the quadriceps showed unequivocal pathological change with focal degenerating fibres, angulated atrophic fibres, and cellular response, partly perivascular. There was no perifascicular atrophy. Electron microscopy showed no evidence of viral inclusion bodies. Viral antibody titres (cytomegalovirus and Coxsackie group) were not raised except for Coxsackie B3 (1/1024), which was unchanged six weeks later. A toxoplasma dye test was negative. He was treated with oral prednisolone 1 mg/kg/day in divided doses. After clinical improvement two weeks later the daily dose was gradually reduced by 2·5 mg every fortnight until it reached 10 mg/day and then by 1 mg every fortnight.

After two months he was considerably better and more active and the serum creatine kinase activity had fallen to 650 IU/l. His condition remained fairly static until May 1982, when there was increased stiffness of the arms, some decline in muscle function, and a rise in serum creatine kinase activity to 1590 IU/l. In June he was readmitted with an acute respiratory infection and increase in muscle weakness. There was skin depigmentation, lichen planus in the mouth, and also herpes labialis. Chest *x* ray films showed left lower lobe collapse and a large right paratracheal mediastinal mass. He was treated with acyclovir, erythromycin, piperacillin, intravenous amphotericin, and methylprednisolone (1 g/m^2 twice daily) and also cyclosporin A, antilymphocyte globulin, and intravenous cyclophosphamide. After an initial slight improvement his condition steadily deteriorated; he had several convulsions and died on 16 July. There was no evidence of leukaemic recurrence in the blood, bone marrow, or cerebrospinal fluid. All efforts to identify a viral infection were negative. Permission for necropsy was refused.

Comment

Although reports of chronic graft versus host disease after bone marrow transplant have included myositis as a late component of the disease complex,[2 3] the present case is unusual in that polymyositis was the only manifestation of graft versus host disease. This raises the possibility of some selectivity of the immune process for muscle antigens rather than a more general involvement of aggressive T cells against various tissues. Cell mediated cytotoxicity has been implicated in polymyositis[4] and the T lymphocytes were thought to be involved.[5]

There is evidence that some cases of polymyositis may be initiated by viral infection. Although our patient had clinical evidence suggesting a viral illness before the onset of his myositis, we were unable to identify any viral basis for his initial or terminal illness despite extensive investigations. The high titre of antibody to Coxsackie B3 was considered to reflect a previous viral infection rather than being causally related, as it was unchanged several weeks later.

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Department of Paediatrics and Neonatal Medicine, Hammersmith Hospital, London W12 0HS
N PIER, MD, clinical research fellow
V DUBOWITZ, MD, PHD, FRCP, DCH, professor of paediatrics

Correspondence to: Professor V Dubowitz.