

larger volumes. As cryptosporidiosis is very common in bovine species ordinary colostrum from some cows may be effective. Hyperimmune bovine colostrum is safer than most drugs, which is a consideration when treating debilitated patients, and, should microbial contamination of colostrum pose a problem in immunodeficient individuals, it could be gamma irradiated without affecting the immunoglobulin concentration. Hyperimmune bovine colostrum appears to be a useful adjunct in the treatment of diarrhoea due to infection with cryptosporidium in patients with immunodeficiency disorders, particularly those in whom treatment with antibiotics has failed. In this patient, however, the rare complication of ascending biliary tract infection was not prevented.

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SHORT REPORTS

Paradoxical gas embolism in a scuba diver with an atrial septal defect

Paradoxical gas embolism has been described during subatmospheric decompression in aviators with intracardiac shunts.¹ We report on a diver with an undiagnosed atrial septal defect who had the clinical features of air embolism without apparent cause.

Case report

A scuba diver developed symptoms after a dive to 38 m for 15 minutes. He had made 100 previous dives, but none had been as deep. He had never performed a dive requiring decompression stops and had not dived during the preceding two weeks. He ascended at an appropriate rate (15 m/min) but failed to make decompression stops. Two minutes after surfacing he noticed abdominal pain, unilateral paraesthesia, and dizziness. A few seconds later he became unconscious. All symptoms resolved over the next 30 minutes. His two diving companions had no adverse effects.

Six hours later he noticed progressive weakness and paraesthesia in both legs but did not seek treatment until the next day. At that time he had mixed motor and sensory paraplegia and his speech was slurred. A chest x ray film showed no evidence of pulmonary barotrauma. Recompression was performed immediately. Fasciculation and paraesthesia in his legs resolved within five minutes. After recompression mild paraparesis remained, which improved over the following year.

He was subsequently found to have fixed splitting of the second heart sound and a pulmonary systolic murmur. Cardiac catheterisation confirmed the presence of a secundum atrial septal defect. The ratio of pulmonary to systemic flow was 3:1. Valsalva's manoeuvre, oxygen breathing, and straight leg raising all produced bidirectional shunting, confirmed by dye dilution. There was no right to left component to the shunt while he was supine and breathing air. The atrial septal defect was corrected surgically, and he was advised not to dive.

Comment

Pulmonary barotrauma and decompression sickness may result from the ascent after a dive.² Decompression sickness results from the release of bubbles of nitrogen from solution as pressure is reduced. Unless large and rapid changes in pressure occur the symptoms and signs of decompression sickness develop over several hours. The dive performed was only just long enough to require decompression stops according to the air diving decompression table of the Royal Navy Physiological Laboratory and British Sub-Aqua Club. Failure to perform stops placed the divers at risk of developing decompression sickness. The paraplegia that developed six hours after the dive was typical of decompression sickness, though the early symptoms were not.

Syncope immediately after surfacing as well as unilateral and unimodal neurological symptoms are characteristic of arterial gas embolism, not decompression sickness.² Arterial gas embolism is usually the result of air embolism due to pulmonary barotrauma, but no cause for this was found. After all dives nitrogen bubbles are formed in the venous system³ but are trapped in the pulmonary capillaries without producing symptoms. In this patient the embolus was probably not air from pulmonary barotrauma but paradoxical embolism of venous nitrogen bubbles.

Although the patient had only a left to right shunt at rest, several manoeuvres caused bidirectional shunting. Immersion and exposure of divers to cold increase cardiac filling pressure, as does straight leg raising,

and might reverse the shunt.^{4,5} During scuba diving the partial pressure of oxygen is increased. This can have considerable haemodynamic effects.³ A raised partial pressure of oxygen caused bidirectional shunting in the patient, as did Valsalva's manoeuvre, which is used by divers to equalise ear pressures. Thus conditions during diving favoured paradoxical embolisation of venous bubbles. Because this dive was deeper than all others the patient had performed it produced the greatest blood nitrogen load and hence the greatest number of bubbles during decompression. It was therefore the one most likely to produce symptoms.

This case emphasises the importance of advising people with intracardiac shunts not to dive.

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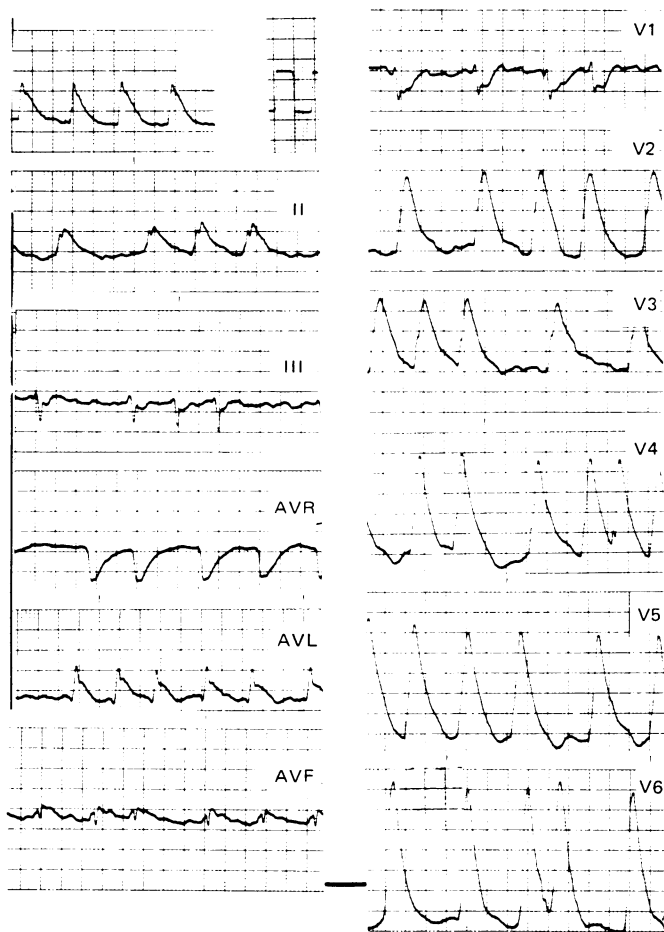
Hyperparathyroidism associated with severe hypercalcaemia and myocardial calcification despite minimal bone disease

Although rare,¹ hyperparathyroid crisis can be cured. Successful treatment depends on early recognition.²

Case report

A 61 year old woman was admitted as an emergency. She was hypotensive and confused. She had been "slowing up" for two years and over the past three weeks had developed pains in the arms and legs, anorexia, indigestion, urinary frequency, and breathlessness. She had not seen a doctor until the previous day. The results of general examination were unremarkable. She had atrial fibrillation at 110 beats/min with a supine blood pressure of 80/40 mm Hg (phase V). Her central venous pressure was measured at 12 cm H₂O. There was no heart murmur. She was tachypnoeic and had bilateral fine basal crackles but no peripheral oedema.

Initial investigations showed a haemoglobin concentration of 129 g/l and a white blood cell count of $28.5 \times 10^9/l$ with neutrophilia. Plasma electrolyte concentrations were: sodium 134 mmol (mEq)/l, potassium 2.5 mmol (mEq)/l, urea 26.3 mmol/l (159 mg/100 ml), creatinine 211 μ mol/l (2.4 mg/100 ml), and



Electrocardiogram performed nine hours after admission. Plasma potassium concentration 3.3 mmol(mEq)/l. Serum calcium concentration 5.8 mmol/l (23.2 mg/100 ml).

glucose 6.4 mmol/l (115 mg/100 ml). Arterial blood pH was 7.42, P_{CO_2} 4.45 kPa (34 mm Hg), and P_{O_2} 5.76 kPa (43 mm Hg) breathing air. A supine portable x ray film of her chest showed pulmonary oedema. X ray films of her hand, pelvis, and chest showed no definite changes associated with hyperparathyroidism. The figure shows her electrocardiogram.

Other investigations included: serum alkaline phosphatase activity 411 (normal range 80-280) U/l, inorganic phosphorus concentration 1.49 (0.8-1.4) mmol/l (4.6(2.5-4.3) mg/100ml), and parathyroid hormone concentration, measured by radioimmunoassay for the C terminal, 9200(200-800) pg/ml. Concentrations of 25-hydroxyvitamin D₃ and 24, 25-dihydroxyvitamin D₃ measured by radioimmunoassay were normal (75 nmol/l (30 ng/ml) and 500 pmol/l (200 pg/ml) respectively), but 1,25-dihydroxyvitamin D₃ was undetectable. Creatine phosphokinase activity was 1767 (normal range 25-195) U/l, and lactate dehydrogenase activity 1766 (230-460) U/l. Thyroid function and immunoglobulin concentrations were normal.

The hypokalaemia and hypoxaemia were corrected and intravenous dobutamine, cefotaxime, and thiamine given. Twelve hours after admission she suffered a respiratory arrest and was mechanically ventilated. At this time her serum calcium concentration was reported as having been 4.8 mmol/l (19.2 mg/100 ml) on admission. Acute peritoneal dialysis with conventional dialysate was started pending availability of calcium free solution. Intramuscular calcitonin and intravenous frusemide were administered. Her blood pressure, however, fell further and despite twelve hours of dialysis her serum calcium concentration increased to 5.7 mmol/l (22.8 mg/100 ml). She died of a cardiac arrest 28 hours after admission. At necropsy an adenoma of the left lower parathyroid gland measuring 4 cm in diameter was found. The heart weighed 500 g, and left ventricular hypertrophy and a yellow mottled appearance of the cut surface were noted. Valves and coronary arteries were normal. The lungs were oedematous and contained embolic antemortem thrombus, as did the leg veins. Macroscopic sections of the kidneys and vertebral bodies seemed normal. Histological examination showed extensive myocardial fibre calcification and degeneration and calcification of thyroid colloid. There was no pulmonary calcification and only slight nephrocalcinosis. Vertebral body sections showed patchy foci of slightly increased activity of osteoclasts, osteoblasts, and fibroblasts.

Comment

This woman showed typical clinical and pathological features of acute hyperparathyroidism.³ The bizarre changes observed on her electrocardiogram have to our knowledge not been previously reported. They

represent the combined effects of accelerated membrane repolarisation due to hypercalcaemia, myocardial injury, pulmonary embolism, and left ventricular hypertrophy. The low concentration of 1,25-dihydroxyvitamin D₃ is surprising because a high concentration of parathyroid hormone normally stimulates 1-hydroxylation of vitamin D in the renal cortex. This finding may have been due to the acute renal failure or a direct effect of the severe hypercalcaemia.

Hyperparathyroidism should be suspected as the cause of severe hypercalcaemia in patients presenting in good general condition without obvious clinical or radiological signs of multiple myelomas or other malignancy. They may have a history of renal calculi or peptic ulceration and may have a palpable mass in the neck, due to the tumour.⁴ X ray films of the hand show subperiosteal erosions in three quarters of these patients, but, as this case emphasises, extensive metastatic calcification can occur without radiologically evident bone disease.²

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Can patients benefit from reading copies of their doctors' letters about them?

The question of patients' access to their medical records is raised by the Data Protection Act. Studies in general practice, obstetrics, and hospital patients show that patient access can be safe and improve patient-doctor communication.^{1,3} Physicians often hold negative views about patients routinely seeing general hospital notes, but it might have advantages and may be inevitable. As a first step towards examining its effect we studied the responses of 50 new outpatients who received a copy of our letter to their general practitioner. We wanted to see if there were advantages for communication. We compared reading the letter with further discussion with paramedical staff and we obtained patients' and general practitioners' opinions on these approaches.

Patients, methods, and results

Fifty consecutive new patients referred to a rheumatology clinic received an unedited copy of the letter sent to their general practitioner after their first consultation. A second group of 50 consecutive patients had an explanatory discussion with a paramedical member of the rheumatology unit after their medical consultation. Using a questionnaire they graded each of these approaches on a five point scale (very good to very poor) for comprehension, information, help, or whether it was a good or bad idea. Eight patients sent copies of the letters did not respond to the questionnaire; 10 patients offered an explanatory talk did not want it.

Subsequently another 50 patients and 50 local general practitioners were given a second questionnaire seeking their preferences for the two methods outlined above and two additional suggestions for improved communication—namely, (a) sending patients a standard letter about their condition in "everyday" language, and (b) asking patients to visit their general practitioner for discussion after the clinic letter arrived. They graded these on a four point scale from best to least satisfactory. All 50 patients and 38 general practitioners responded to this second questionnaire.

Both reading the hospital letter and talking with paramedical staff were acceptable and had advantages for doctor-patient communication. The table summarises the results. The letter compared favourably with a further discussion. Over half of the patients thought seeing the letter both helpful and clear; many found it informative. It was not always as useful as talking with paramedical staff. Only one patient found the letter confusing; her problems were solved promptly on return to the clinic.

Responses to the second questionnaire showed that patients were equally divided in their opinions of the alternatives; 19 (38%) thought further discussion with their general practitioner the worst alternative. General practitioners were more polarised; 21 (55%) preferred the idea of patients having further discussion with paramedical staff, but only 5 (13%) thought patients reading the clinic