there was a significant rise in the $Paco_2$ ($P<0.001$) in ten patients (table) but no significant change in the other two values. Mean plasma cholesterol concentration was 5·6 mmol/l (range 2·6-7·7) (216 mg/100 ml (100-297)) (normal 4-8 mmol/l (154-308 mg/100 ml)) while the mean plasma cortisol concentration in the 13 patients studied was 472 nmol/l (range 110-1090) (17 μg/100 ml (range 3-39)). Normal at 0900 was 280-690 nmol/l (10-25 μg/l). The routine biochemical and haematological tests showed no unexplained abnormalities.

Comment

These results do not confirm an association between alkalosis[1] or acidosis[2] and intractable pain. In the 13 patients studied the plasma cortisol concentrations were similar to those reported.[3] Plasma cholesterol concentrations were within the normal range. Nevertheless, the low $Paco_2$ found in all groups associated with a normal pH confirms the chronicity of the hyperventilation observed. All but chronic anxiety and noradrenaline of the documented ventilation stimuli[5] could be excluded as the stimulus to this hyperventilation. But whatever the ventilatory stimulant, it is almost certainly secondary to intractable pain. This is confirmed by the significant rise ($P < 0.001$) in $Paco_2$ found in the 10 patients who had obtained pain relief. It has been possible to use the rise in $Paco_2$ after pain relief as objective evidence of successful treatment.

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[1] Evans, R J, *Canadian Journal of Surgery*, 1972, **15**, 34.
[2] Lindhal, O, *Advances in Neurology*, vol 4, p 45. New York, Raven Press, 1974.
[3] Lascelles, P T, *et al*, *Brain*, 1974, **97**, 533.
[4] Keele, K D, and Stern, P R S, *Journal of the Royal College of Physicians*, 1973, **7**, 319.
[5] Hey, E N, *et al*, *Respiration Physiology*, 1966, **1**, 193.

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Extensive retinal haemorrhages in infancy—an innocent cause

Extensive retinal haemorrhages in babies other than neonates are recognised as an important sign of child abuse,[1] being associated with violent shaking and the development of subdural haematomas,[2] and sometimes with thoracic compression.[3] We report such haemorrhages in a baby who had patently not been a victim of abuse.

Case report

A previously well 2-month-old boy was left asleep in his pram in the garden protected by a cat net. After 30 minutes his father discovered him lying undisturbed but not breathing. He picked him up and found him pallid and limp, and thought he was dead. He called his wife, who came at once and held the baby to her shoulder and slapped him repeatedly on the back to try and revive him. Eventually he choked and spluttered, and at last began to breathe again. There was a little blood staining his face and the pillow, and some bloody mucus was expelled from his nostrils.

On arrival in hospital 10 minutes later he was still gravely ill, being barely conscious, shocked, and cyanosed, with erratic and inadequate respiration and a pulse rate of 160/min. He was afebrile. He was well-nourished, with no evidence of neglect or trauma, but there was blood caked in his nostrils. The eyes had no external injury and the media were clear, but we could see extensive fresh haemorrhages in the nerve-fibre layer of both fundi. There was bilateral macular oedema but no swelling of the optic discs.

His haemoglobin was 8·2 g/dl and chest radiography showed patchy bilateral perihilar shadowing. All other investigation results were negative or normal (blood film; leucocyte and platelet counts; clotting studies; concentrations of serum electrolytes, calcium, and urea; cultures of blood and cerebrospinal fluid (CSF); CSF biochemistry and cytology; viral culture of nasopharyngeal secretions; skeletal survey; and subdural taps).

He rapidly improved after treatment with oxygen, intravenous fluids, and antibiotics. He remained irritable and hyperreflexive at first but after three days he was back to normal. He could fixate and follow a light, and optico-kinetic nystagmus was readily elicited. Electroretinography and measurement of visually evoked responses showed satisfactory function of both retinas and of the higher pathways. A repeat chest radiograph was clear. When reviewed two months later he appeared entirely unscathed by the experience. His eyesight seemed normal, and the retinal haemorrhages had completely resolved.

Because of initial suspicion of child abuse the parents were questioned with particular care on the child's admission and were later interviewed by a senior paediatrician. Their answers throughout were frank, consistent, and entirely convincing, and the family doctor and health visitor attested to their excellent parenthood. Not a single feature emerged from the social background, the history, or the physical findings to support this suspicion.

Comment

Retinal haemorrhages can be produced by thoracic compression that is insufficient to cause detectable damage to the chest itself.[4] The retinal vessels of infants may be particularly vulnerable, for many babies have extensive fundal haemorrhages after an apparently normal birth.[5] We think that this baby became apnoeic after aspirating blood from an epistaxis, and that his mother's life-saving measures transmitted pressure from the thorax to retinal veins that were already compromised by hypoxia.

To avoid accusing innocent parents of battering their babies vigilance for child abuse must be balanced by open-mindedness to alternative explanations for its typical features: extensive fundal haemorrhages are not invariably diagnostic.

We thank Professor J K G Webb for his encouragement in reporting this case.

[1] Gilkes, M J, and Mann, T P, *Lancet*, 1967, **2**, 468.
[2] Caffey, J, *American Journal of Diseases of Children*, 1972, **124**, 161.
[3] Tomasi, L G, and Rosman, N P, *American Journal of Diseases of Children*, 1975, **129**, 1335.
[4] Morgan, O G, *Transactions of the Ophthalmological Society of the United Kingdom*, 1945, **65**, 366.
[5] Baum, J D, and Bulpitt, C J, *Archives of Disease in Childhood*, 1970, **45**, 344.

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Needle tracheostomy for acute upper airway obstruction

Emergency tracheostomy is seldom needed, but when it is speed and simplicity are important. The introduction of a Medicut intravenous cannula (Sherwood Medical Industries Ltd) into the trachea to provide a temporary airway while preparations are being made for a formal tracheostomy has been described but has not attracted the attention that it deserves. I describe a patient on whom needle tracheostomy was used successfully.

Case report

A 64-year-old man with a history of chronic sputum production (peak expiratory flow 150 l/min) was admitted with a five-week history of hoarseness and a one-week history of increasing shortness of breath. No obvious cause for his symptoms could be found, and there was no evidence of an acute exacerbation of his chronic lung disease. Radiography showed a hyperinflated chest, but the lung fields were clear and there was no bronchial neoplasm. Indirect laryngoscopy was arranged because of a possible laryngeal neoplasm. Before this could be done, however, he developed acute stridor

and was severely distressed with cyanosis and a tachycardia of 120/min. He was tachypnoeic (rate 45/min) with a small tidal volume, using his accessory respiratory muscles, and there was pronounced intercostal recession and supraclavicular indrawing. An immediate needle tracheostomy was performed by pushing a 16G Medicut into the trachea just below the cricoid cartilage. The needle and syringe of the Medicut were then withdrawn to leave the cannula in place. The inspired air was enriched by supplying oxygen from a 24% Ventimask placed over the cannula. The symptoms were substantially relieved and his pulse rate dropped to 100/min and respiratory rate to 25/min. One hour later he had a formal tracheostomy under local anaesthesia, when his stridor was found on biopsy to be caused by oedema around an infiltrating, squamous cell carcinoma of the vocal cords. After a course of radiotherapy to the larynx and surrounding region he was discharged two months later with a tracheostomy.

Comment

This patient developed acute respiratory distress from rapid obstruction of his airway by oedema surrounding a laryngeal carcinoma. A needle tracheostomy was performed with complete success, so that further management could be started and a histological diagnosis made. It is a simple, quick, and relatively atraumatic procedure that needs no complex equipment, in contrast to a formal tracheostomy, which most clinicians would be unhappy to carry out in an acutely ill patient.

There were 13 deaths per million population from respiratory obstruction by foreign bodies in England and Wales in 1974.[1] Although this patient had a neoplastic obstruction of his airway, this technique may also be used in upper airway occlusion associated with pharyngeal foreign bodies, trauma from road traffic accidents, or angioneurotic oedema. Experiments have shown that the 12G (2·3 mm diameter) Medicut can sustain ventilation.[2] An adequate temporary airway, however, was provided in this man, who already had compromised ventilatory function, by an even smaller 16G (1·70 mm diameter) cannula.

Needle tracheostomy with a Medicut can be used in casualty departments and by general practitioners as well as in a hospital ward. It is a technique that can preserve life and allow time for a formal tracheostomy to be performed in an acute upper airway obstruction emergency.

I thank Dr W E D Moore for permission to report this case.

[1] Office of Population Censuses and Surveys, *Mortality Statistics, England and Wales 1974*. London, HMSO, 1977.
[2] Clarke, S W, and Cochrane, G M, *The Practitioner*, 1975, **215**, 340.

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Is pancreatic isotope scanning worthwhile?

The clinical role of pancreatic isotope scanning remains controversial,[1-3] and reassessment is appropriate in view of the recent development of alternative imaging methods. We have determined the diagnostic accuracy of pancreatic isotope scanning in two hospitals, and surveyed the clinical demand for such tests in 17 British departments of nuclear medicine.

Patients, methods, and results

At St Thomas's Hospital (1972-3) 61 patients were scanned using a Nuclear Enterprises Mark III gamma camera with a high-energy, parallel-hole collimator after injection of selenomethionine; technetium liver scans were performed separately on most patients. Eighty-one patients were scanned at the Middlesex Hospital (1975) using an Elscint whole-body counter and a focused collimator. Subtraction images of the pancreas were obtained after scanning with both selenomethionine and ^{99m}Tc sulphur colloid. Scan reports (normal, abnormal, or equivocal) were given by experienced observers without access to clinical information.

The pattern of patients and results was similar at the two hospitals, and are combined in the table. Of 65 patients finally believed to have no pancreatic disease, only 27 had a normal scan, and there were 22 false-positive reports. Of 51 patients with a normal scan report, only 27 were finally judged to have a normal pancreas. A normal scan may be expected in many patients with relapsing pancreatitis between attacks, but false-normal reports were also given in six patients with chronic pancreatitis, and three with pancreatic cancer.

Results of isotope scanning at two hospitals

Scan report	Total	Final diagnosis				
		Normal	Relapsing pancreatitis	Chronic pancreatitis	Cancer	Not clear
Normal	51	27	13	6	3	2
Abnormal ..	61	22	14	20	5	0
Equivocal ..	29	16	0	5	3	5
Total ..	141	65	27	31	11	7

Believing that the clinical demand for a test provides a severely practical assessment of its value, we asked for data from the 17 full-time British consultants in nuclear medicine concerning the numbers of pancreatic isotope scans performed in their departments during the five years 1972-6, with similar data for liver scanning. The demand for liver scanning was increasing, and no centre was performing fewer than 300 tests per year. By contrast, only five of the 17 centres were performing more than one pancreatic scan each month, and five did not offer the service at all. In those centres performing pancreatic scanning there was no trend to increased demand. Four centres (including St Thomas's and the Middlesex) had discontinued pancreatic scanning after internal assessments of accuracy.

Comment

Assessing the value of different pancreatic diagnostic tests is complicated by the different questions which may be asked, the frequent lack of a firm independent diagnosis, and the fact that results often depend as much on the investigator as on the specific technique. Thus results at one centre may not be applicable elsewhere. Skilled arteriography, endoscopic pancreatography, and computed tomography can now all provide precise and detailed information about the pancreas.[4] Nevertheless, these complex tests cannot be considered as having a screening role. While most reviewers agree,[1-3] and our results confirm that false-positive isotope scans are frequent and that the technique cannot separate pancreatitis from cancer, it would still have screening value if a normal scan was a reliable indicator of pancreatic normality; in our studies it was not. Its lack of a valid clinical role is demonstrated by meagre national demand. Isotope scans may provide some useful information about pancreatic function—for instance, after partial pancreatic resection—but, unless there are major new technical developments, diagnostic scanning is not worth its appreciable cost in time, money, and radiation exposure. Grey-scale ultrasonography provides an alternative screening test of considerable potential.[5]

[1] Baron, J H, in *Topics in Gastroenterology*, volume 3, ed S C Truelove, and M J Goodman, p 129. Oxford, Blackwell, 1975.
[2] Agnew, J E, Maze, M, and Mitchell, C J, *British Journal of Radiology*, 1976, **49**, 979.
[3] Mitchell, C J, *et al*, *British Medical Journal*, 1976, **2**, 1307.
[4] Cotton, P B, *Gut*, 1977, **18**, 316.
[5] Doust, B D, *Gastroenterology*, 1976, **70**, 602.

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