Episodes of hypoglycaemic attacks attended by ambulance personnel

Condition of patient at scene	Response to treatment				Transported to hospital	
	Improved	No change	No record	No treatment	No	Yes (admitted)
Coma/fitting (n = 19)	17	1	1		6	13 (7)
Confused (n = 10)	8		1	1	1	9 (3)
Aggressive (n = 6)	2		1	3	2	4 (1)
Total (n = 35)	27	1	3	4	9	26 (11)

was recorded in 34 episodes and was 2·2 mmol/l or less. Patients in 19 episodes were described as semiconscious/comatose or fitting, in 10 as confused, and in six as aggressive. Patients were treated on 31 occasions: oral glucose alone was given to two patients, oral glucose and intravenous dextrose to one, and intravenous dextrose alone (10-75 g) to the remainder. No treatment was possible for one patient because of difficult access to the veins or for three patients because of aggressive behaviour. One of these patients received intramuscular glucagon from an attending general practitioner and refused admission to hospital. After being treated by ambulance personnel there was a definite improvement at the scene in patients in 27 cases, the mean length of time at the scene being 30·7 minutes (range 14-50 minutes).

Only 11 of the 35 episodes ended with admission to a hospital ward. In six cases the patient refused to travel to hospital, and in three the general practitioner attended and the ambulance crew was "stood down." In 12 cases patients were taken to the casualty department but were discharged without further treatment or adjustment to their drugs; in three cases patients received further treatment in the casualty department before being discharged.

Comment

Severe attacks of hypoglycaemia occur in over a tenth of insulin dependent diabetic patients each year.[2] Though this is usually reversible by prompt treatment with oral glucose, intramuscular glucagon, or intravenous dextrose, it is still implicated in the deaths of about 5% of diabetics under the age of 50.[3]

Our results show that ambulance personnel with extended training can diagnose and treat most patients with severe hypoglycaemia using an intravenous infusion of 50% dextrose. If intramuscular glucagon had been available more patients could have been treated; this should be carried by all emergency ambulance crews. Glucagon alone, however, may not be as effective or act as rapidly as intravenous dextrose.[4,5]

After treating patients successfully ambulance personnel are obliged to transport patients to hospital unless a general practitioner takes responsibility for the patient or the patient refuses to travel. In this last case ambulance personnel are advised to contact the patient's general practitioner, though there is no formal policy on this. In this study 20 episodes of hypoglycaemia were treated by ambulance personnel alone and patients were not admitted to hospital wards. These patients may not have required transport to hospital if they had been adequately supervised by a relative, if a visit from their general practitioner could have been organised, or if the cause of the hypoglycaemia was obvious.

CW is Prophit-Rosser fellow of the Royal College of Physicians (London).

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Early experience with an implantable intratracheal oxygen catheter

Mark Jackson, Martin King, Sandra Hockley, Francis Wells, John M Shneerson

Assisted Ventilation Unit, Newmarket General Hospital, Newmarket, Suffolk CB8 7JG
Mark Jackson, MRCP, *research fellow*
Martin King, *chief technician*
Sandra Hockley, *technician*
Francis Wells, MS, *consultant surgeon*
John M Shneerson, FRCP, *consultant physician*

Correspondence to:
Dr Shneerson.

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Transtracheal oxygen delivery through a fine catheter has recently been reported as an alternative to the use of nasal cannulas or facemasks.[1] Its benefits include lower flow rates and improved comfort and compliance. Conventional tracheal catheters, however, often become infected, fractured, or displaced and are conspicuous.

We report our experience of a recently introduced tunnelled intratracheal catheter designed to overcome these problems.

Patients and methods

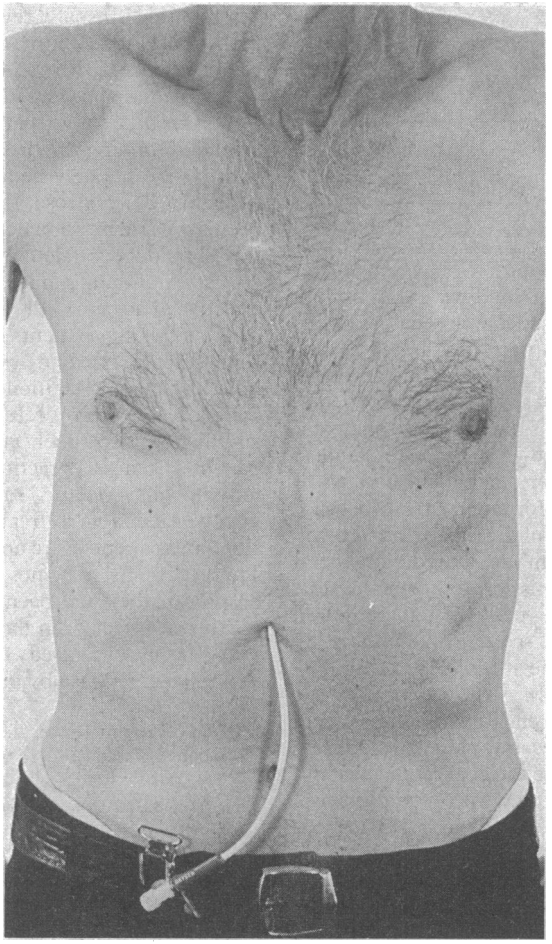
Five patients (four men, one woman; age range 52-69) had the procedure. All had chronic airflow obstruction with severely impaired pulmonary function (forced expiratory volume in one second mean percentage predicted value 25, range 18·6 to 33·5). They were maximally medically treated and received domiciliary oxygen.

A 43 cm 11 French gauge silicone intratracheal oxygen catheter was used (Cook Critical Care).[2] The intratracheal end of the catheter was <1 cm and directed caudally. A round, Dacron covered fixation disc was sutured to the external tracheal wall; a further tissue ingrowth cuff was situated two thirds of the way along the catheter to aid fixation in the subcutaneous tunnel.

The implantation procedures were performed under local anaesthesia. The catheter tip entered the trachea between the third and fourth tracheal rings through a small transverse skin incision, which was then closed, and the catheter was drawn through its subcutaneous tunnel to a convenient exit site below the costal margin. It was flushed regularly postoperatively to maintain its patency and to prevent the formation of mucous balls. Oxygen delivery through the catheter was started five to seven days postoperatively, and optimal flow rates at rest and on exertion were measured.

Results

The duration of the implantation ranged from 30 to 50 minutes, and the procedure was well tolerated by all patients. Two patients developed small areas of subcutaneous emphysema which resolved within 48 hours. One experienced increased dyspnoea four weeks postoperatively, which resulted from the formation of a 1 cm mucous plug around the intratracheal portion of the catheter because of inadequate flushing and did not subsequently recur after the patient's technique was corrected. Fixation of the



Tracheal catheter in place showing small subcutaneous loop above suprasternal notch and exit site below costal margin

tracheal disc was incomplete in one patient, permitting the development of subcutaneous emphysema and inflammation in the neck three weeks postoperatively, and the catheter was removed through the subcutaneous tunnel. In one patient the distal cuff was placed too close to the tunnel exit resulting in local inflammation which settled after changing the exit site.

Comment

Transtracheal oxygen delivery permits reduction of flow rates by about half[3,4] by preventing wastage around the nose and mouth and by reducing the oxygenated dead space. Conventional tracheal catheters, though less obtrusive than nasal cannulas or facemasks, necessitate a visible tracheotomy, which is not acceptable to all patients. The tracheostomy site is open and liable to infection, particularly with *Staphylococcus aureus*.[3] The catheter may become displaced with risk of loss of the insertion track,[4] and the long intratracheal portion is liable to fracture and increases the risk of appreciable development of mucous balls.[5]

We believe that the catheter used in this study is cosmetically superior as it is invisible at the neck. The long subcutaneous tunnel, closed tracheal site, and the seal provided by the tracheal fixation disc prevent contamination of the neck wound. The short intratracheal portion is intended to reduce the likelihood of formation of mucous balls. Insertion of the catheter was tolerated well, and the rate of complications was low during follow up of between three and nine months. The patients thought that the catheter was beneficial and continued to use it subsequently in preference to nasal cannulas or facemasks.

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ONE HUNDRED YEARS AGO

Mr. Auberon Herbert raised questions of great importance in the true interests of educational improvement when he issued his protest against the sacrifice of education to examination, and forcibly drew public attention to the evils of an overgrown system of competitive examinations. A volume recently issued by Mr. Auberon Herbert,[1] consists of a couple of hundred pages, containing short papers on the subject of examinations by a large number of persons well acquainted with the practical educational value of examinations of many kinds; most of these contributors were signatories of the "Protest," but a fair number of objectors have given their opinions for maintaining the *status quo*, having no better method to suggest in substitution. We cannot say that the important issues raised by the "Protest" are in any way decisively answered by this large collection of opinion on the matter, or that any line of remedial action for an admitted evil stands out prominently as receiving a large consensus of opinion among those who write with the authority of experience. However, all who are interested in advancing mental growth and culture by educational methods may learn something of the evils that have resulted, and will continue to result, from trusting too largely to the value of examinations, which are too often improperly used by candidates, and all may gain some hints as to lessening the bad results upon education. The field presented for the reader's consideration is so wide, commencing with the control exercised by the State over primary education, and passing up to competitive examination for university honours and the higher appointments under the Government, that it may be useful to have the expression of so large a body of opinion. We should like to have seen more direct evidence as to the good or evil effects of the various classes of examinations; this the signatories of the "Protest" hoped might be effected by a Royal Commission, or other public inquiry. There is a strong expression of opinion against the folly of students entering upon a severe competitive examination as a simple means of winning a money prize, as being harmful to true mental culture—yet, if scholarships are to be abolished, as some would have, how is the able but poor man to be helped along the difficult path of learning? Should fellowships and bursaries be given without competition, and who is to be entrusted to make a wise and impartial selection? We must deal with humanity as we find it, and certainly the opinion of higher class students, especially those of the medical profession, is that the introduction of a compulsory examination system has proved an incentive to work, has given to individual men a means of testing their individual mental capacity, and has afforded the public a means of estimating educational success. Examinations for young children, such as those about to enter a school, appear by general consent to be a test which should, if possible, be done away with; in primary schools the children benefit but little by examination, though some kind of assessment of school work is necessary in the interests of the public who pay. Many of the papers in this volume deal rather with defects in teaching, and in examining, than with the intrinsic evils of the examination system. In fact, the opinions elicited would have had greater weight had they been classified according as they dealt with education or examination, and the class of examinations dealt with. The methods of examination under Continental Governments are explained by some writers, and the question whether teachers should be examiners is entered into by several correspondents. Mr. Auberon Herbert says well when he speaks of the value of mind shaping mind, and the advantage of personal contact of the student with the mind of a great teacher—no examination intervening—but, then, most teachers are not "great men." We thoroughly sympathise with the editor in his view that various methods of education should be used, according to the temperament and nature of the pupil; and it may be hoped that improvement will follow the attention that has been drawn to the subject.

(*British Medical Journal* 1890;i:85)

[1] *The Sacrifice of Education to Examination: Letters from "all sorts and conditions of men."* Edited by Auberon Herbert. London and Edinburgh: Williams and Norgate.