

sought. It must therefore disappoint many to discover that the measurement of carbon dioxide concentration in expired gases may be misleading.

However, deeper analysis of the paper by Linko *et al*, in which greater than 4% carbon dioxide was detected in gas expired from the stomach of two patients,² is reassuring. In making recordings from a Magill endotracheal tube placed in the oesophagus traces of carbon dioxide (0.2-1.5%) were found in the outflowing gas during manual ventilation into the oesophagus (9 out of 20 patients). The carbon dioxide disappeared after a few ventilations, its presence being due to exhaled gases gaining access to the stomach by mask ventilation before intubation. The pattern of carbon dioxide recording is quite distinct from that of gases expired from the lungs.

In two additional patients Linko *et al* simulated inadvertent filling of the stomach by exhaled gas during mask ventilation by blowing air mouth to tube into the oesophagus and initially recorded much higher carbon dioxide values, 4.4 and 4.9%. "Here again, the first ventilation resulted in the highest CO₂ value; repeated ventilations resulted in rapidly diminishing gastric CO₂, indicating gradual dilution. After the 6th ventilation only 1 and 1.6 vol % of CO₂ were recorded. Thus distinction from tracheal intubation was not a problem. On the other hand, distension of the stomach resulted in a definite backflow of gases and an almost normal filling of the breathing bag."

To presume that any method of detecting inadvertent oesophageal intubation was foolproof would surely lead to complacency, and Dr Kerr was correct in pointing out the hazards of over-reliance on end tidal carbon dioxide concentrations in expired gas. However, capnography remains a considerable advance over existing subjective methods, and I would echo the recommendation of Birmingham *et al* that the technique should be used routinely.³

On a practical level steps could be taken to prevent exhaled carbon dioxide from entering the stomach during ventilation of the lungs with a face mask. Examples include the use of a non-rebreathing valve, absorption of carbon dioxide by soda lime in a breathing circuit, or high gas flows in a Mapleson A attachment.

A W AITKEN

Department of Anaesthesia,
Queen Alexandra Hospital,
Portsmouth

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- 2 Link K, Palohelmo M, Tammisto T. Capnography for detection of accidental oesophageal intubation. *Acta Anaesthesiol Scand* 1983;27:199-202.
- 3 Birmingham PK, Cheney FW, Ward RJ. Oesophageal intubation: a review of detection techniques. *Anesth Analg* 1986;65:886-91.

SIR,—I agree with all that Dr John H Kerr writes (15 August, p 400), but if I cannot confirm the correct position of an endotracheal tube by seeing at least one vocal cord encircling the tube I inflate oxygen down the tube at the rate of 1-2 l/min. An improvement or maintenance of the patient's colour (best assessed from the inside of the lip) confirms the correct position of the tube. Use of a low volume of 100% oxygen ensures adequate oxygenation if the tube is in the trachea and avoids gross distension of the stomach with nitrous oxide if it is not. This technique confirms the position of the tube quickly if preoxygenation has not been used; if it has the test must be continued for several minutes.

E N S FRY

North Tees General Hospital,
Stockton on Tees

Gastrointestinal endoscopy in the young

SIR,—Given that the arguments about open access endoscopy services are still being debated¹ and that the incidence of serious upper gastrointestinal disease is inversely related to age, many dyspeptic young patients will continue to be referred to gastroenterology units for an endoscopic diagnosis.

Other authors have suggested that upper gastrointestinal endoscopy in young patients is not worth while in terms of subsequent change in management.^{2,3} Dr L N Forbat and colleagues (8 August, p 365) argue otherwise, but, having studied a similar group of 52 patients (38 men, mean age 22.8 years), we suggest that they understate the case in favour of performing endoscopy in young patients.

Dr Forbat and colleagues state that only two out of 36 patients with normal findings at endoscopy and only 38 out of 64 patients with abnormal findings had a subsequent change of management. Our results were similar, with none of 10 patients with normal findings and 31 of 42 patients with abnormal findings subjected to a change of management as defined by their criteria.

When we reviewed our 21 "failures" we found that useful information was obtained in most. Of the 10 patients with normal findings on endoscopy, four had previously reported abnormalities refuted, two were later identified as having psychiatric disorders, one was dyspeptic while taking a non-steroidal anti-inflammatory drug, and in only three could the endoscopy be regarded as unhelpful. Of the 11 patients with abnormal findings but no change in management, three had evidence of Mallory-Weiss tear, three had gastritis related to tobacco, alcohol, or dietary indiscretion, one was already taking ranitidine, and four had a non-inflamed sliding hiatus hernia, not thought to be the cause of their dyspepsia.

Thus we conclude that endoscopy in the young is a highly productive procedure — quite apart from the economic viewpoint, since young dyspeptic patients may have a lifetime of referrals ahead of them.

PETER J MULLEN
ANNE SLATER

Medical Department,
Royal Air Force Hospital,
Wegberg, BFPO 40

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Emergency phlebography service

SIR,—A painful swollen calf has several causes. We were therefore surprised that Drs M J Charig and E W L Fletcher thought it reasonable to dismiss patients with a normal phlebogram without a definite diagnosis. Complications of popliteal cysts ("pseudothrombophlebitis") cause a painful swollen calf about as often as true thrombophlebitis in non-surgical patients presenting to district hospitals.^{1,2} Up to half of all ruptured Baker's cysts occur in non-arthritis knees.³ Up to a third of patients with deep vein thrombosis have popliteal cysts contributing to their symptoms.²

Clinical evaluation is notoriously unreliable in providing a correct diagnosis of the painful swollen calf.¹ Therefore further investigation is required to treat the patient appropriately. Emergency phlebography or ultrasonography requires a special service, whereas arthrography to show a ruptured cyst is performed easily and safely by the resident medical staff and radiographer.

Giving anticoagulants to a patient with a ruptured Baker's cyst can worsen the symptoms as well as expose the patient to unnecessary risk.⁴ The urgent management decision therefore rests more on whether the patient has a ruptured knee than on whether or not there is a deep vein thrombosis. Thus arthrography is not only the more convenient emergency investigation; it also provides more critical information than phlebography.

IAN SYKES
SIMON DOVER
THOMAS S LOW-BEER

Medical Education Centre,
Selly Oak Hospital,
Selly Oak, Birmingham B29 6JD

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Diet, plasma lipids, and coronary heart disease

SIR,—The data from Mr M Thorogood and colleagues (8 August, p 351) confirms that vegans have lower plasma cholesterol and low density lipoprotein cholesterol concentrations than vegetarians and meat eaters, as do fish eaters. Unfortunately, however, no information is given about the eating habits of the four groups. Would it not have been possible to provide data on, and relate plasma lipid concentrations to, the polyunsaturated and saturated fatty acid composition (even polyunsaturated to saturated fat ratios would be interesting) of representative sample diets? What proportion of fish eaters ate oily or white fish, and what were the differences in dietary ratios of polyunsaturated to saturated fat and plasma lipid concentrations? Was there a difference in plasma lipid concentrations in vegetarians using olive oil in comparison with those using other edible oils? Were any adipose tissue samples obtained?

The data should, in my opinion, have been left to stand on their own and not extrapolated to the totally unproved and speculative effects of such diets in reducing the incidence of coronary heart disease. The supposition that a 10% reduction in plasma cholesterol concentration might be associated with a 30% reduction in coronary heart disease is based on a simulation model that assumes an equal effect at all cholesterol concentrations and that the plasma concentration of cholesterol, and related lipoproteins, is the uniquely powerful cause of the disease, excluding all other influences. The excursion into the wishful thinking of health educators was unnecessary and unwise, unless Mr Thorogood and coworkers expect us all to become vegans.

M F OLIVER

University of Edinburgh,
Edinburgh EH8 9XF

AUTHOR'S REPLY.—We have collected information about dietary intake from a substantial proportion of the four groups of volunteers studied. Analysis of detailed dietary data is immensely time consuming, however, and we considered the laboratory findings to be sufficiently interesting to justify publication as the dietary analysis will not be completed in the near future. In due course we will be able to provide the answers to all the questions about eating habits raised by Professor Oliver. It was, unfortunately, not possible to collect samples of adipose tissue.