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# LETTERS TO THE EDITOR

## Bronchography in the assessment of patients with lung collapse for endoscopic laser therapy

We would like to make the following comments on the bronchographic technique described in the study by Dr PJM George and colleagues (July 1990;45:503–8). Firstly, the iodine content and the osmolarity of the contrast medium Omnipaque used in the study were not mentioned, nor was it clear whether the same method was used to perform the bronchography after laser therapy. Secondly, the technique of selective bronchography via the fibreoptic bronchoscope which we have recently described using the contrast medium Iotrolan (a water soluble non-ionic dimer)[1 2] would be suitable for this indication. Direct injection of the contrast medium into the suction channel of the fibreoptic bronchoscope, after its tip has been placed at the proximal end of the tumour, should be attempted initially. It is simpler and less time consuming than the technique described by Dr George and his colleagues. Spilling of contrast medium into the contralateral patent bronchial tree should not cause pulmonary oedema as Iotrolan 300 (320 mmol/kg $H_2O$) is almost iso-osmolar with the blood. If direct injection proved unsuccessful a catheter technique could be tried.

Low osmolar dimeric contrast media are more appropriate for such examinations. A monomeric non-ionic contrast agent such as Omnipaque at a concentration iso-osmolar with the blood would have an inadequate iodine content to produce a diagnostic result. Higher concentrations might induce pulmonary oedema if a substantial amount of the contrast medium were to spill over into the contralateral normal lung. We have used our technique successfully in one case with an obstructing central bronchial carcinoma being considered for laser therapy. We were able to show the extent of the tumour and the patency of the distal bronchi.

SK MORCOS
PB ANDERSON
*Departments of Diagnostic Radiology and Thoracic Medicine, Lodge Moor Hospital, Sheffield S10 4LH*

1 Morcos SK, Baudouin SV, Anderson PB, Beedie R, Bury RW. Iotrolan in selective bronchography via the fibreoptic bronchoscope. *Br J Radiol* 1989;62:383–5.
2 Morcos SK, Anderson PB, Baudouin SV, Clout C, Fairlie N, Baudouin C, Warnock N. Suitability of and tolerance to Iotrolan 300 in bronchography via the fibreoptic bronchoscope. *Thorax* 1990;45:628–9.

AUTHOR'S REPLY We would like to thank Drs Morcos and Anderson for drawing our attention to an inadvertent error that was made in the text of our paper. Dionosil contrast was used throughout our study and not Omnipaque as is stated in the text.

Although there may be certain advantages associated with the use of Iotrolan in conventional bronchography (their ref 2), the ability to inject contrast directly into the suction channel of the bronchoscope is unlikely to be of value in patients with lung collapse. In most patients in our study tumour caused complete obstruction over several centimetres of the airway. It is most unlikely that contrast applied at the proximal border of such a tumour would penetrate sufficiently to provide a satisfactory image of the distal bronchial tree. A catheter technique is therefore essential. Furthermore, it is not particularly time consuming and is easy to perform.

PJM GEORGE
MC PEARSON
RM RUDD
*London Chest Hospital, London E2 9JX*
MR HETZEL
*University College Hospital, London WC1E 6AU*

## Value of washings and brushings at fibreoptic bronchoscopy in the diagnosis of lung cancer

Dr V H F Mak and colleagues (May 1990;45:373–6) suggest that biopsies with both brushings and washings should always be carried out in the investigation of suspected lung cancer.

We performed a similar retrospective study of all our bronchoscopies in 1987–8, using the same exclusion criteria as Dr Mak and colleagues. We observed 171 lung cancers; biopsies and washings were obtained in 133 cases. One hundred and one had endoscopic evidence of malignancy (group A) and 32 had a normal bronchoscopic appearance (group B). Diagnostic sensitivity was 93% and 75% respectively. In group A biopsies gave a positive result in 89% and washings in 83%; cytological examination of washings provided a positive diagnosis in four cases with normal histological appearances. In group B biopsy specimens were positive in 53% and washings in 59%; washings gave the only positive result in 22% (7/32). Statistical analysis by the two tailed Fisher's exact test showed no significant difference between the diagnostic sensitivity of using biopsy specimens only and the combination of biopsy specimens and washings, either in group A or in group B. Indeed, reanalysing the results of Dr Mak and colleagues we obtained no statistically significant difference between the sensitivity of the combination of biopsy, brushing, and washing and the use of biopsy and brushing only. Like other authors,[1] on the basis of these analyses we do not think that bronchial washings should be carried out routinely for suspected lung cancer.

When bronchoscopic appearances are normal, cytological examination of sputum after bronchoscopy might be useful. We collected 109 samples of postbronchoscopy sputum in 47 of our 171 patients with lung cancer; 57 samples gave a positive result. In 22 patients (47%) neoplastic cells were present in the first sample collected after bronchoscopy. This procedure gave the only positive result in 10 patients (21%), six of whom had a tumour that was not visible endoscopically. Statistical analysis ($\chi^2$ test with Yates's correction) showed that cytological examination of sputum after bronchoscopy improved the diagnosis of the tumours when the endoscopic appearance was normal ($p < 0.05$). These results are in keeping with other observations,[2] but our series of cases is too small to draw any conclusion.

In our opinion the use of biplanar fluoroscopy to guide transbronchial fine needle aspiration or biopsy is at present the most reliable method for the diagnosis of peripheral lung cancer.

LUCIO TREVISANI
PAOLO PAZZI
SERGIO SARTORI
ALFREDO POTENA
*First Medical Department of Medicine, S Anna General Hospital, Ferrara, Italy*

1 Solomon DA, Solliday NH, Grecey DR. Cytology in fiberoptic bronchoscopy. Comparison of bronchial brushing, washing and post-bronchoscopy sputum. *Chest* 1974; 65:616–9.
2 Funahasi A, Browne TK, Houser WC, Hranicka LJ. Diagnostic value of bronchial aspirate and postbronchoscopic sputum in fiberoptic bronchoscopy. *Chest* 1979;76:514–7.

Dr Mak and colleagues (May 1990;45:373–6) described a retrospective study of 680 bronchoscopies and concluded that "a definite answer to the question of which combination of cytological and histological procedures gives the highest diagnostic yield requires a prospective study. . . ."

In this district general hospital I have kept prospective data on all bronchoscopies (over 1600) since my appointment in 1979. Our data are not directly comparable with those of Dr Mak and colleagues as we have categorised bronchoscopy appearances differently: definite tumour seen; definitely malignant but no actual tumour seen; probably malignant; possibly malignant; normal. Positive histocytological yields were over 90%, 82%, 63%, 26%, and 7% respectively. We also showed that biopsy samples were most specific with 98% definitely positive and 2% suspicious; smears were 84% positive and 16% suspicious; washings were 73% positive and 27% suspicious.

Virtually all patients had washings, smears, and biopsy samples taken in that order, which is different from the order in the study of Dr Mak and colleagues.

If we take together the categories "definite tumour seen" and "definitely malignant but no actual tumour seen," washings gave the only positive result in 7% of cases, smears in 7%, and biopsy specimens in 17%, which agrees with their conclusion that all three techniques seem to be required for maximum diagnostic yield.

In several ways our study format differed from that of Dr Mak and colleagues and, frustratingly, no previous two studies appear to have collected exactly the same data. If, as the authors suggest, a prospective study is planned it would be of more interest and value if interested units applied an agreed protocol.

There are implications here for medical audit. Without doubt variations in performance would be identified. Will units be prepared to compare results, identify reasons for variations, and attempt to remedy them? If so, this could be a fruitful area for collaboration.

PETER SEMPLE
*Inverclyde Royal Hospital, Greenock PA16 0XN*