

Correspondence

Extrinsic allergic alveolitis caused by a cold water humidifier

SIR—We read with interest the report by Dr AS Robertson and others (January 1987;42:32-7) of extrinsic allergic alveolitis caused by a cold water humidifier. The causative agent among the humidifier sludge responsible for the extrinsic allergic alveolitis remained elusive. There is a possibility that the alveolitis was due to bird fancier's lung caused by inhalation of avian droppings. This was not specifically sought by bronchial provocation testing despite the authors' findings of precipitating antibodies to budgerigar and pigeon droppings in all three subjects. Although there was no known contact with birds in any of these subjects, we have recently observed a reactivation of bird fancier's lung in a previous fancier who initially appeared to have had no avian contact for several years. Detailed investigations showed that she had been exposed to pigeon droppings through a skylight in the roof of the building in which she worked. Therefore can the authors reassure us that there was absolutely no likelihood of contamination of the humidifier with avian protein? In addition, we feel that it would have been informative to perform bronchial challenge testing with avian protein since a positive response in the presence of precipitins would be highly suggestive that this was the offending antigen in the sludge.

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*.*This letter was sent to the authors, and Drs Robertson and Burge reply below.

SIR—Drs Williams and Gordon raise an important question of avian antigen specificity. Bird fancier's lung is due to hypersensitivity to avian serum proteins, particularly immunoglobulin.¹ To cause alveolitis relatively large quantities of antigen must be inhaled. Pigeon droppings must first dry before antigen can become airborne; this may take at least a week. The major source of avian antigen in bird fanciers is probably the bloom off the feathers, which contain immunoglobulin. The droppings contain not only immunoglobulin but also many bacterial and fungal antigens. Teichoic acid is found in droppings and is a constituent of bacterial cell walls, resulting in non-specific precipitin reactions.² Of 81 bird fanciers investigated by Hargreaves and Pepys with bronchial provocation testing, only three reacted to exposure to avian droppings but not to serum.³ Each required a minimum of 10 minutes' exposure to an extract of at least 10 mg/ml, a dose which was about 20 times higher than that used in our patients, and one which might cause non-specific reactions. Our patients had precipitins to avian droppings but not to avian serum, and reacted to a five minute exposure to humidifier antigens at 1 mg/ml. We have also shown that the humidifier antigen was specific—not resulting in any reaction in two unexposed asthmatic patients.

Our humidifier antigen has cross reacting antibodies with

avian droppings on double diffusion plates, but no reaction with avian serum, which would fit with a bacterial (or fungal) antigen common to both. Nor were there precipitins to ovalbumin, which can account for the finding of avian serum precipitins in coeliac patients.⁴ Antibodies to ovalbumin are also sometimes seen in patients with bird fancier's lung. It is possible that eating hen's eggs containing ovalbumin may cause a deterioration in patients with bird fancier's lung and may be a feature in Dr Williams' patient. Even without identifiable exposure some patients with bird fancier's lung continue to deteriorate.

The workers' factory had never been known to have birds inside the printing area. It would theoretically have been possible for a pigeon to get into the water spray humidifiers, but as these were run continuously any bird would have been beaten to the ground and not have had time to liberate significant amounts of antigen into the 22 700 litre reservoir of each humidifier. There was no chance that droppings excreted outside could enter the humidifiers.

The confusion could be avoided by the use of avian serum rather than droppings for routine precipitin testing. The droppings are, however, cheaper and more plentiful!

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- 1 Faux JA, Wells ID, Pepys J. Specificity of avian serum proteins in tests against the sera of bird fanciers. *Clin Allergy* 1971;1:159-70.
- 2 Faux JA, Holford-Strevens V, Wells ID, Pepys J. "False positive" precipitation reactions to extracts of organic dusts due to teichoic acid from *S aureus*. *Clin Exp Immunol* 1970;7:897-907.
- 3 Hargreave FE, Pepys J. Allergic respiratory reactions in bird fanciers provoked by allergen inhalation provocation tests. *J Allergy Clin Immunol* 1972;50:157-73.
- 4 Faux JA, Hendrick DJ, Anand BS. Precipitins to different avian serum antigens in bird fancier's lung and coeliac disease. *Clin Allergy* 1978;8:101-8.

Rapid diagnosis of sputum negative miliary tuberculosis using the flexible fiberoptic bronchoscope

SIR,—The paper by Dr PA Willcox and others (September 1986;41:681-7) on the need for the use of the flexible fiberoptic bronchoscope in the rapid diagnosis of sputum negative miliary tuberculosis is to be welcomed. We feel, however, that the sensitivity and efficiency will be substantially enhanced when serial paraffin sections are made and stained with Ziehl-Neelsen (ZN) and auramine-rhodamine (AR)¹ methods for histological identification of *Mycobacterium tuberculosis*.

Prompted by an experience, we performed a prospective study of simultaneous staining of ZN and AR methods between January 1983 and January 1987. The tissue blocks were prepared and 11 serial sections, each 5 µm thick, were obtained from each block. The first four sections were stained with the ZN stain and the second four with the AR, and three were stained with haematoxylin and eosin, periodic acid-Schiff, and trichrome. Twenty five patients were obtained (16 *M tuberculosis*, one *M marinum*, one *M avium* type 3 and one type 4, and one BCG strain; five cases were diagnosed without culture). Twenty one cases were