Quantitative relations between exposure to respirable coalmine dust and coalworkers' simple pneumoconiosis in men who have worked as miners but have left the coal industry

Sir,—Soutar and MacLaren have conducted a most interesting and thorough survey on the prevalence of progressive massive fibrosis in coalminers (1986;43:29–38). Nevertheless, some of us might be pardoned for wondering how reliable a diagnosis of PMF is in the absence of a background of category 2 and 3 simple pneumoconiosis and in particular in subjects with category 0. The ideal way to conduct such a study is to do as they have done—namely, to have the radiographs read by lay people and then have one “experienced” clinician “record his opinion based on all available clinical data,” thereby deciding whether PMF is present. If there is a sole final arbiter then interobserver variation ceases to be a problem. One wonders also exactly which clinical data—the history, physical signs, or laboratory investigations—are of help in making a diagnosis of PMF.

Some 15 or so years ago, we conducted a radiological survey of a large group of coalminers, steel workers, and other blue collar workers.¹ Unfortunately, we were unwise enough to use four “experienced” clinicians for the interpretation of the chest radiographs. When it came to making a diagnosis of PMF, there was much argument and often little in the way of consensus. Moreover, PMF was found by one or two readers fairly frequently in those who had never been exposed to dust. Since all four readers considered themselves experienced, and since two of them also regarded themselves as infallible, precision as to diagnosis was difficult to achieve.

I would suggest that the only valid approach to the problem of deciding who has PMF, and of establishing probabilities, is to include in any survey of coalminers a comparable control group of chest radiographs selected from non-coalminers. When the National Coal Board began the Pneumoconiosis Field Research Study tuberculosis was still a major problem and remained so for several years. Many large shadows in coalminers in the late 1950s and early 1960s were undoubtedly due to tuberculosis, and the differentiation from PMF was difficult, even at necropsy.

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Reference

- ¹ Reger RB, Morgan WKC. On the factors influencing consistency in the radiological diagnosis of pneumoniosis. *Am Rev Respir Dis* 1970;102:905–15

Dr MacLaren and Dr Soutar reply:

We thank Dr Morgan for his observations. We stated in our paper that the panel of readers did not “diagnose” the radiographic appearances but simply recorded the presence of large opacities. Earlier work has shown that their nominations of large shadows¹ correspond fairly well with medically qualified readers’ classifications of PMF.² For what it is worth one “expert” (basing his opinion on all available radiographs and clinical information volunteered by the men when seen at survey) thought that at least 82% of the men with the large opacities had PMF. These judgments were validated by the demonstrated relation of incidence of large opacities with category of simple pneumoconiosis and with cumulative exposure to respirable dust, a finding unlikely to have resulted if the opacities had been largely tuberculous. Note that no cases were reclassified or excluded on the basis of the “expert’s” opinion, which as Dr Morgan has pointed out, was also open to diagnostic error.

We have at present no information on whether the correspondence between “large opacities” and PMF was less close in men with little or no simple pneumoconiosis at the start of the period. Since the category of simple pneumoconiosis described referred to the appearances on the chest radiographs taken *before* the large opacities were observed, by intervals ranging from 11 to 22 years, there would have been time for simple pneumoconiosis to develop in the intervening period. Attacks of PMF over five year periods where the initial category of simple pneumoconiosis was 0 or 1, however, have also been reported in two analyses of data from the British National Coal Board’s x ray scheme^{2,3} (a study separate from the Pneumoconiosis Field Research) and cases where typical PMF has developed on a background of category 1 or 0 simple pneumoconiosis are known to us. Final confirmation of diagnostic accuracy would of course require tissue examination.

References

- ¹ Copland L, Burns J, Jacobsen M. Classification of chest radiographs for epidemiological purposes by people not experienced in the radiology of pneumoconiosis. *Br J Ind Med* 1981;38:254–61.
- ² McLintock JS, Rae S, Jacobsen M. The attack rate of progressive massive fibrosis in British coalminers. In: Walton WH, ed. *Inhaled particles III*. Vol 2. Old Woking (Surrey): Unwin Bros, 1971:933–52.
- ³ Shennan DH, Washington JS, Thomas DJ, Dick JA, Kaplan YS, Bennett JG. Factors predisposing to the development of progressive massive fibrosis in coal miners. *Br J Ind Med* 1981;38:321–6.