Notes and miscellanea

Silicosis

A note on the role of family susceptibility, occupational and family histories, and individuals' blood groups in the development of silicosis.

I read the recent article by Noweir and his colleagues (vol 37, p 399) with great interest. I have long had the suspicion that silicosis is more genetically determined than has previously been thought. When one considers that coal workers with pneumoconiosis have abnormal serum immunoglobulin concentrations,¹ that sandblasters with silicosis have an increased prevalence of antinuclear antibodies,² and that there appears to be an association between silicosis and scleroderma³ as well as rheumatoid arthritis, one may conclude that genetic and immunological factors play a part in the pathophysiology of silicosis. As I read the article by Noweir *et al*, however, I had two questions concerning the validity of their results.

Firstly, it is impossible to determine whether the workers with less silicosis also had less dust exposure. From our own studies of silicosis among foundry workers⁴ it is clear that different types of worker have a significantly different prevalence of silicosis.

Secondly, the findings that workers with blood groups O and AB had a higher prevalence of silicosis and that workers with blood groups A and B had a lower prevalence were interesting but partially in contradiction to earlier Egyptian work. Emara *et al*⁵ found that blood group O was associated with a high prevalence of silicosis (66.7%) while blood groups B and AB were associated with the lowest prevalence rates (3.0 and 6.1% respectively); group A was associated with an intermediate rate (24.2%). Thus the present study showed a high prevalence of silicosis among workers with blood group AB whereas an earlier study had shown a low prevalence in men with this blood group.

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Noweir replies:

I agree with Dr Sherson that workers with different degrees of exposure can have significantly different prevalences of silicosis. The distribution of the workers examined in our study according to their degree of exposure is presented (table). The prevalence of silicosis in the workers in exposure groups a1, a2, and a3 is similar and is significantly higher than the prevalence in groups b1, b2, and c. These data will be presented elsewhere. Moreover, visual inspection of the data of the individual families has shown that the distribution of the workers of the different families in the three types of exposure (a, b, and c) is similar. No significant differences were observed in the distribution of blood groups among the workers with the highest exposure and those with low or undetermined exposure.

Concerning the apparent discrepancy between our data and those of Emara *et al*,⁵ with respect to the association of blood groups with the prevalence of silicosis, this contradiction might be partially attributed to the differences in the type of exposure and to ecological and personal factors in the populations in the two studies. Subjects examined by us worked in a refractory plant and lived in a village 70 km south of Cairo while those examined by Emara worked in an asbestos-cement industry in Cairo and in the iron mines and crusher at Aswan.

References

- ¹ Hahon N, Morgan WKC, Petersen M. Serum immunoglobulin levels in coal workers' pneumoconiosis. *Ann Occup Hyg* 1980;23:165-74.
- ² Jones RN, Turner-Warwick M, Ziskind M, Weill H. High prevalence of antinuclear antibodies in sandblasters' silicosis. *Am Rev Respir Dis* 1976;133:393-5.
- ³ Devulder B, Plouvier B, Martin JC, Lenoir L. The association scleroderma-silicosis or Erasmus' syndrome. *Nouv Presse Med* 1977;6:2877-9. (In French.)
- ⁴ Frost J. *Investigation of silicosis among Danish foundry workers*. Copenhagen: Danish Labor Inspectorate, 1977. (In Danish.)
- ⁵ Emara AM, Zaghloul AM, Mahmoud AH. ABO blood groups and pneumoconiosis. *Egyptian J Occup Med* 1977;5:1-6.

Exposure to silica dust in two refractory plants

Exposure code	Department	Dust concentration* † (Mean $\pm$ SD mg/m ³)	Content of free SiO ₂ (Mean $\pm$ SD %)	No of exposed workers
a1	Crushing and milling, plant I	19.3 $\pm$ 4.9	7.3 $\pm$ 0.9	39
a2	Crushing and milling, plant II	25.8 $\pm$ 24.6	8.8 $\pm$ 1.1	62
a3	Mixing	17.8 $\pm$ 12.7	14.6 $\pm$ 1.3	61
b1	Pressing and forming, plant I	1.4 $\pm$ 0.5	2.1 $\pm$ 0.3	124
b2	Pressing and forming, plant II	1.9 $\pm$ 1.3	2.1 $\pm$ 0.3	250
c	Other jobs	†	†	278

*Respiratory dust by personal sampling.

†May be statistically computed as the mean of the concentrations in the identified jobs.