of asbestos bodies per 5 gm. of lung after the 1940s and also a gradual increase in the number of asbestos bodies per 5 gm. of lung with increased age at death.

The case we have presented illustrates that minimal exposure to asbestos can cause mesothelioma. We took multiple 5 gm. samples from both lungs and counted the asbestos fibers. There was an average of 168 fibers per 5 gram sample of lung. This figure is 11 times higher than the age-matched control (12.5 gm.) and about six times higher than the mean of asbestos fibers (28.6 5 gm.) in a control population reported by Bhagavan and Koss.[5] If one assumed that both lungs weighed 1500 gm., there would have been approximately 50,400 fibers ($168 \times \frac{1500}{5}$) in the lungs. If one assumes the average exposure time for 20 years, the yearly accumulation of fibers in the lung would be 2520 per year (50,400/20). This figure is minuscule if we consider the enormous numbers of fibers that will be inhaled in an environment of 2 fibers per ml. set by the Occupational Safety and Health Administration as the safety limit.[11]

Our method of quantitation of fibers differs markedly from that of Pooley.[12] He extracted the fibers from 6 μm. histologic section samples, whereas we used 5 gm. wet tissue samples. Our samples therefore are many thousands of times larger than his. We believe that the case presented here would have been included in his category 6 (zero fibers found per grid).

It is well established that the human body can remove most of the fibers inhaled. The accumulation of asbestos fibers in this patient to a level above the control levels resulted from either exposure or diminished clearance. The well documented minimal exposure in this case suggests that the latter may be important. The margin of safety between the average exposure and the level at which some individuals develop malignant mesothelioma may be narrow indeed.

With an awareness of the nonspecificity of the so-called "asbestos" body,[13] we established the identity of the fibers and crystals by use of electron probe analysis. As shown in Figures 6 and 7, the chemical components (Si, Mg, Ca, Fe) are characteristic of asbestos.[14,15] One important observation is the relatively small amount of iron in the core (fiber). Yet a large amount of iron is present on the beaded body portion. This finding is in agreement with the notion that the coating around the fiber is the aggregation of ferritin or ferritin-like particles deposited on the fiber surface.[10]

We report this case to emphasize again the association of malignant mesothelioma with a very limited exposure to asbestos, and the validity of (relatively) quick identification of "asbestos" bodies by electron probe x-ray dispersion analysis. This technique can serve to identify other crystals or metals present in tissue.

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