

REPRINT SCHEME

"Ferruginous Bodies" in Guinea Pigs

Fine Structure Produced Experimentally From Minerals Other Than Asbestos

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Electronmicroscope studies of "ferruginous" bodies, produced in guinea pigs in response to fine glass fiber and ceramic aluminum silicate, have shown that the fine structure of these bodies is identical to that of asbestos bodies. All these bodies are produced intracellularly, mainly in giant cells. Their coating consists of small dense granules, approximately 60 Angstroms in diameter, that probably represent ferritin or hemosiderin. This coating may be laid down as a single dense layer or as a series of variable layers. Usually all bodies are separated from the giant cell cytoplasm by a distinct membrane, but in some of the older bodies this membrane is no longer present.

ASBESTOS bodies were probably first observed by Fahr and Feigel in 1914,¹ but they were not immediately associated with asbestos exposure. Fahr and Feigel called them strange crystals, and later in 1924, Cooke² suggested that because of their beaded nature they might be fungi. Stewart and Haddow³ realized that they were an integral part of the disease. They therefore coined the term "asbestosis body," but it was later understood that the number of bodies present was not directly related to the degree of lung fibrosis. For this reason the bodies became looked upon

solely as an indication of asbestos exposure. It was felt that they were produced in response to this mineral alone, and the term asbestosis body was changed to asbestos body. Gloyne, in 1932,⁴ demonstrated that each asbestos body contained a central core of asbestos dust surrounded by a coating which he thought contained iron and some protein material. The iron protein nature of the capsule was confirmed by Beger⁵ and Sundius and Bygden.⁶

After the 1920's the industrial hazards of asbestos exposure were well known and resulted in most countries in strict hygienic regulations for factories and mines. It was believed, however, that the use of products containing asbestos was not dangerous to the general public and did not result in the liberation of harmful asbestos dust.

This idea was repudiated by the findings of Thomson et al in 1963,⁷ who reported that structures very similar to asbestos bodies were present in the lungs of 30% of unselected autopsy cases from Cape Town. It seemed, therefore, that asbestos might be becoming a general urban hazard and studies were undertaken in other cities. These confirmed Thomson's results and bodies were found in 30% of autopsies from Miami,⁸ 43% from Pittsburgh,⁹ and 48% from Montreal.¹⁰ A more recent study in Pittsburgh¹¹ has found bodies in nearly 100% of autopsy cases. In all these reports, however, only a few bodies were found in each case and they appeared to result in no pathological changes in the lungs.

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