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Pulmonary Ferruginous Bodies

Development in Response to Filamentous Dusts and a Method of Isolation and Concentration

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Formation of ferruginous bodies should not be confused with pathogenicity. Failure to understand this differentiation may result in the erroneous generalization that all fibrous dusts share the ability of abestos to produce lung damage. Such materials as fibrous aluminum silicate, silicon carbide whiskers, cosmetic talc, and glass fibers produce ferruginous bodies experimentally which are indistinguishable from those produced by asbestos fibers. A method of isolation and concentration of ferruginous bodies from lungs of animals and humans is described. Ferruginous bodies from asbestos fibers are much more pleomorphic than has generally been described, casting further doubt on morphological distinctions used in the past in separating so-called asbestos bodies from pseudoasbestos bodies.

WORLDWIDE attention was refocused on ferruginous bodies by the publication of Thomson,[1] who found this phenomenon in the lungs of more than 30% of unselected autopsied adult hospital patients in Capetown, South Africa. A similar percentage was noted in Miami,[2] 43% in Pittsburgh,[3] and 48% in Montreal.[4] The higher percentages reported in Pittsburgh and Montreal are possibly inherent in the more intensive searches carried out in these cities. These bodies are similar to asbestos bodies, though the natures of the central fibers have not been identified.

Asbestos bodies are golden-brown, ferro-coated formations found in the lungs of persons who have inhaled asbestos dust. They are generally described as symmetrical, segmented structures, usually with clubbed ends, 3μ to 5μ in diameter and 20μ to 50μ long. The core is composed of a transparent colorless asbestos fiber that is not always demonstrable.

Apparently the only difference between an asbestos body and a pseudoasbestos body is that in the former, the central fiber is composed of asbestos, and in the latter, of material other than asbestos.

Since asbestos-like bodies can form in response to respirable, transparent, colorless fibers deposited in the lungs and composed of materials other than asbestos; and since basing classification of these structures upon identification of the central fiber presents difficulties, a generic term, "ferruginous," has been proposed for all bodies formed in response to the presence (in body tissues) of a broad spectrum of fibers, including asbestos. Davis[5] and Collet (according to a letter in June 1966) demonstrated with the electron microscope that ferruginous bodies are formed within macrophages by granules of ferritin or a ferritin-like protein

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