Asbestosis and Lung Cancer

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Numerous reports in the world literature associate lung tumors and asbestosis. Some from the United States are: Lynch and Smith, 1935 and 1939; Egbert and Geiger, 1936; Holleb and Angrist, 1942; Homburger, 1943; Clinico-Pathological Conference, Massachusetts General Hospital, 1947; Isselbacker et al, 1953; Lynch and Pratt-Thomas, 1955; Anderson and Campagna, 1960; and Cordova et al, 1962. Hueper (1955) states that there are 21 reported cases in the United States. O'Donnell and Mann (1957) found 13 of 27 cases with carcinoma (50%). Mancuso and Coulter (1963), in a cohort analysis of 1,495 people employed during 1938 and 1939 at one asbestos factory, found eight of 52 with asbestosis died from carcinoma of the lung between 1940 and 1960. They further state that this number is on the low side due to inadequacy of available details. It is therefore surprising that a recent report, Hannon et al (1964), suggests that "the incidence of carcinoma of the lung and pleura is not enhanced in North American cases of asbestosis." This paper is based on a study of 52 American cases of asbestosis with lung tumors in ten, (19.2%), an incidence, though not statistically significant, which approximates that for Great Britain; Gloyne (1951)—14%; Annual Report Chief Inspector of Factories (1959)—17.8%; and Doll (1955)—14.2%. Isselbacker et al (1953), in reviewing the world literature, give an incidence of 13.8%.

Material

The tumors in this series were discovered during another investigation concerned with peripheral epithelial changes in industrial lung disease (Jones Williams, 1957). The major part of the material consisted of histological slides and paraffin blocks from autopsies, and a few pneumonectomies. In a few cases whole lungs were available. Sections were stained with hematoxylin and eosin and with special stains as required. The diagnosis had been made originally from known exposure, gross appearance, histological findings of diffuse interstitial fibrosis and presence of asbestos fibers and/or bodies.

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Results

Table 1 summarizes details of the ten cases with carcinoma. With one exception all were over 40 years of age, with a maximum number in the sixth decade. Details of exposure were available in the ten carcinoma cases: six fabricators, three process workers, and one asbestos miner. Table 2 shows the exposure details, when known, in the total series: 33 fabricators, nine process workers, and six asbestos miners, as well as the distribution of the cases with carcinoma. Fabricators include weavers, corders, spinners, and insulating workers. Process workers are those concerned with extracting asbestos fibers from the ore. The duration of exposure of the tumor cases, with one exception, was 12 or more years. In the total series the range was from one-50 years, 26 with less and 17 with more than 20 years' exposure.

The ten tumor cases showed various histologic types: squamous, three; anaplastic, three; adenocarcinoma, two; alveolar cell carcinoma, one; and mesothelioma of pleura, one. They showed all possible sites of origin,

TABLE 1.—*Carcinoma—Age, Sex, Exposure, Duration, and Histology*

Case No.	Age, Sex	Exposure	Duration	Histology
1	—*,M	Miner	6	Anaplastic
2	41,M	Process	12	Adenocarcinoma
3	43,M	Fabricator	20	Squamous
4	37,M	Fabricator	—	Endothelioma pleura
5	45,M	Fabricator	30	Adenocarcinoma
6	60,M	Process	40	Squamous
7	—	Fabricator	—	Anaplastic
8	—,F	Fabricator	—	Alveolar cell
9	63,M	Fabricator	18	Squamous
10	50,M	Process	21	Anaplastic

* — Indicates not known.

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