

July, 1950, a conference was held at Oxford dealing with cancer in relation to sociological and environmental factors other than occupation. Proceedings of this conference have been published.<sup>51</sup>

### ABSTRACT OF DISCUSSION

DR. PAUL CARTIER, L'Annonciation, Que., Canada: I have been asked to describe our experience at the Thetford Industrial Clinic in Quebec, where we see men engaged in the asbestos-mining industry in Canada. Table 3 presents data on eight cases of primary cancer of the lung which we have detected among 4,000 asbestos workers between 1940 and 1950.

In addition to those listed in the table, there was a case in which there was quite a definite clinical and radiological history of cancer of the lung but for which, unfortunately, no autopsy was performed. Also there were three other cases with a strong suspicion in favor of a cancer of the lung but for which no sufficient data are available.

On analyzing these data it seems obvious that many points would need discussion before anyone will be able to establish a causal relationship between these pathological findings and the asbestos factor.

Is it not more logical to think that the same causal factor will produce the same type of tumor, and, therefore, why do we observe such a variety of malignant tumors?

TABLE 3.—Cases of Carcinoma of the Lungs Detected Among 4,000 Asbestos Workers 1940-1950

| Patient | Years of Exposure | Years in Industry | Age at Death | Degree of Asbestosis | Type of Tumor                                       |
|---------|-------------------|-------------------|--------------|----------------------|-----------------------------------------------------|
| J. A.   | 30                | 34                | 59           | Minimal              | Bronchogenic carcinoma                              |
| A. A.   | 25                | 25                | 57           | Minimal              | Bronchogenic carcinoma                              |
| A. L.   | 21                | 21                | 51           | Advanced             | Mediastinal lymphosarcoma with pulmonary metastasis |
| L. G.   | 11                | 17                | 54           | None                 | Bronchogenic carcinoma                              |
| L. L.   | 10                | 26                | 65           | Minimal              | Pleural mesothelioma*                               |
| E. G.   | 2                 | 14                | 64           | None                 | Bronchogenic carcinoma                              |
| C. B.   | None significant  | 27                | 59           | ....                 | Bronchogenic carcinoma (thoracotomy)                |
| W. C.   | None              | 28                | 65           | None                 | Pleural mesothelioma*                               |

\* "Standard Nomenclature of Diseases and Operations" published by the American Medical Association (New York, The Blakiston Company, 1952) suggests the term "mesothelial sarcoma."

If for a moment we may assume that the asbestos fibers might produce a bronchogenic carcinoma in asbestotic employees with significant exposure, then only two cases of the series would serve as evidence because the cases of mesothelioma or lymphosarcoma and cases without exposure or without asbestosis do not have the conditions required.

As a last remark, it would appear necessary that any statistics on occupational cancer of the lung, to be conclusive, should indicate the precise variety of lung cancer.

MR. EDWARD A. LEW, New York: The difference in the frequency of lung cancer in persons with asbestotic lungs as compared with the large group of silicotics provided by the Pneumoconiosis Board seems impressive. However, one might wonder whether the two groups had been examined for cancer with equal care. I am impressed by the fact that when different groups of lungs were studied by the same observer, Dr. Gloyne, the differences in frequency of lung cancer were much less. If we restrict our attention solely to Dr. Gloyne's series, I am not sure that the differences are statistically significant.

DR. A. J. LANZA, New York: I think it is important to distinguish between cases of clinically recognizable and fatal lung cancer, on one hand, and cases in which the diagnosis of lung cancer has been made as more or less of an incidental finding at autopsy, on the other. The English claim for an association between lung cancer and asbestosis has been based, it seems to me, on data obtained from lungs that a pathologist has searched with a microscope. I wonder how many

51. Conference on Geographical Pathology and Demography of Cancer. J. Nat. Cancer Inst. 11:627-662, 1950.

cases of lung cancer would be found if lungs from any sort of population were subjected to the same minute scrutiny?

DR. SMITH: In regard to Dr. Cartier's query as to the significance of different types of lung cancer, it may be pertinent to note that a diversity of tumors was found in the lungs of chromate workers reviewed by Dr. Anna Baetjer. Experimentally, the polycyclic hydrocarbons evoke a great variety of tumor types. If asbestos is carcinogenic, I would not expect to see it produce only one type of tumor. I am interested in your observation of two cases of pleural mesothelioma. This is a rather rare tumor. In examining pathological material sent us from England by Dr. Hinson, we found among six cancerous asbestotic lungs two presenting alveolar cell carcinoma. These tumors are often diagnosed as "pleural mesothelioma." I should very much like to exchange slides with you.

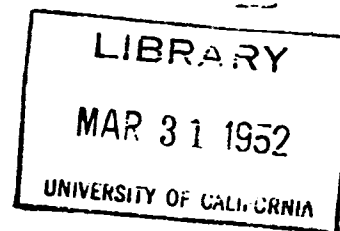
In reply to Mr. Lew and Dr. Lanza, it was my understanding that the English cases of silicosis and their cases of asbestosis were handled in the same general fashion through the Pneumoconiosis Board and that the lung cancer rate found in silicotics could therefore serve as a reasonably satisfactory control for the lung cancer rate in cases of asbestosis. In Dr. Gloyne's series of 81 cases of lung cancer in the several pneumoconiosis groups and in the control group, the tumor was evident in the gross in all except 6. Some of his material was destroyed during the bombing of London, but his recollection was that all of the cancers in asbestotics were recognizable in the gross.

DR. JOHN L. POOL, New York: Have experimental studies thrown any light on the question of lung cancer in relation to asbestosis?

DR. SMITH: In 1941, Nordmann and Sorge in Germany claimed to have produced cancer in the lungs of mice by exposing them repeatedly to asbestos dust. Their statement that cancer had resulted in 20% of their exposed animals is occasionally quoted. Actually, their "20%" figure referred only to two mice, one of which had a type of tumor that occurs commonly as a spontaneous growth in mice. The other they considered to be a squamous cell carcinoma, but their photograph does not impress me as that of epidermoid carcinoma. It seems rather to show merely an area of squamous cell metaplasia.

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**MARCH 1952**  
**VOLUME 5      NUMBER 3**

Published Monthly by  
**AMERICAN MEDICAL ASSOCIATION**  
535 NORTH DEARBORN STREET • CHICAGO 10, ILLINOIS

Entered as Second Class Matter Jan. 4, 1950, at the Postoffice at Chicago, Under the Act of March 3, 1879. Annual Subscription, \$8.00

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