

experimental work on mouse and rabbit skin, some such idea must be evoked by a problem such as that of asbestosis and cancer, until some more experimental evidence of direct carcinogenesis by asbestos or a decomposition product of it can be obtained. If such an idea is feasible, then we must also assume a pre-neoplastic preparedness in the organ in which the co-carcinogen (asbestos or the fibrous tissue in the peribronchiolar reaction) later induces a further development into true neoplastic growth. The preparedness of the tissue if it is to be regarded as more than a form of words is brought about by something independent of the asbestosis, and this must be regarded as an endogenous factor. But some special property must also attach to the asbestosis for the alleged cancer induction in this condition is not apparently found in the long-standing cases of silicosis.

We will first consider the evidence that asbestosis leads in a proportion of cases to cancer of the lung. As long ago as 1938 the suspicion arose that asbestos workers might be more than normally prone to lung cancer.

Nordmann (1938) analysed six cases of lung cancer and showed that the range of exposure periods was 7-21 years, and the range of intervals between entering the industry and death was 15 to 21 years. The malignant disease in some cases occurred years after leaving the industry. Half of these cases were comparatively young, 35-41 years of age at death. In one remarkable case a 71-year old woman had worked in asbestos for only 19 months. Later in the same year he referred to a further seven cases of associated asbestosis and lung cancer, including Gloyne's (1936) finding of six cases of carcinoma of the lung in 50 necropsy cases of asbestosis.

In the 1947 Annual Report of the Chief Inspector of Factories, Merewether tabulated the age incidence among 235 deaths caused by asbestosis: in 13.2 per cent of these cancer of the lung was present, and it is especially important to note that 4.8 per cent of the age-group 25-34 years and 5.6 per cent of the age-group 35-44 years had this condition. It will be seen that the over-all figure is closely in agreement with Gloyne's findings.

In a further report* carrying this analysis up to the end of 1954, he found that amongst 344 deaths, in 55, or 16.0 per cent, cancer of the lung was present.

In their series of papers on asbestosis Lynch and Cannon (1948) give an analysis of the post-mortem examination of 40 cases of asbestosis among which 3 cases of carcinoma of the lung were found associated with medium or advanced grades of asbestosis, which, according to these authors, is seven times the general incidence in the United States.

In a more recent study of the clinical picture and pathology of asbestosis, Behrens (1952) estimated that of 309 cases of asbestosis reported in the literature there were 44 cases of carcinoma of the lung (14.2 per cent) whereas in a series of 2,204 cases of silicosis only 32 such tumours were found (1.4 per cent).

* Annual Report Chief Inspector of Factories for 1954, pp. 190-193

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