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Etiology of Lung Cancer

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I. Introduction

1. Conclusions of Louvain Symposium

Knowledge of the causes of lung cancer was reviewed at an international symposium on the "Endemiology of Lung Cancer" held at Louvain in 1952 (Council for International Organizations of Medical Sciences, 1953). The members of the symposium were unable to decide what factors were responsible for the majority of cases, but important conclusions

were reached on more limited problems. Firstly, it was agreed that "a significant part" of the increase in mortality which had been reported from many countries "is absolute and represents a real increase in the number of people suffering from primary cancer of the lung"; secondly, "that there is now evidence of an association between cigarette smoking and cancer of the lung, and that this association is in general proportional to the total consumption"; and thirdly, that "occupational hazards giving rise to lung carcinoma have been demonstrated in a number of industries, in particular, in the handling of asbestos and chromates, in gas-works, in a factory refining nickel and in certain mines bearing radio-active ores."

Other possible etiological factors were considered—in particular, atmospheric pollution by effluvia and smoke from factories and domestic chimneys and by exhaust fumes from petrol and diesel engines. The possibility that carcinogenic agents might be absorbed through ingestion or skin contact was reviewed, as was the possibility that individuals might vary in their susceptibility to the environmental influences to which they were exposed. No positive conclusions were reached with regard to these latter problems.

In the last two years, however, much new evidence has been obtained, and it is now possible to give a more complete picture of the etiology of the disease.

II. Increase in Incidence

1. Extent of Increase

The highest death rate from lung cancer is recorded in Britain, where, in 1953, it was 342 per million persons. For both sexes taken together, lung cancer was the commonest type of fatal cancer, accounting for 17% of all cancer deaths; it accounted for 5% of male deaths from all causes at all ages and, in the age group 45 to 64 years, for 10% of all male deaths. In other countries for which detailed statistics are available the rate varies from a seventh to approximately two-thirds the British rate (Table I).* The disparity between the rates is mainly due to a disparity between the rates for men; with the exception of England and Wales, Scotland, and Finland the female rates are similar, varying only between 34 and 47 per million women. Each of the countries listed has experienced an increase in the mortality attributed to lung cancer in the last half century, and the increase appears to be still continuing (Fig. 1).

*In Table I, the figures for England and Wales and for Scotland are shown separately. The Scottish rate for all persons has usually been lower than the English and Welsh rate, but in 1953 the rate was slightly higher—346 per million against 342 per million.