

Asbestos and Lung Cancer: The Clinicians' Questions

Introduction

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The title of this symposium is self-explanatory. It was planned with the objective of reviewing the database on the subject for chest physicians in the light of questions which they ask or are asked in clinical practice. This includes reminding ourselves of the nature of the scientific information upon which we must draw for clinical action, and which we are increasingly called upon to interpret, not only to our patients and their families, but also to their co-workers, their unions and employers, the public, and courts of law. Particularly in the latter circumstance we may be cornered into trying to answer legal questions which do not appear to respect the nature of scientific information. For example, "In which year, doctor, was it known that asbestos causes lung cancer?" a question the reply to which requires an understanding of what constitutes evidence of causality in the context of human disease.

Science proceeds not by fiat, but on the basis of the formulation of hypotheses and their constant revision in the light of new information. This is as true of the science of clinical medicine as it is of experimental medicine. By this, I mean that every diagnosis a clinician makes is no more, no less than a scientific hypothesis—the best he or she can muster to explain the facts about a case; every time he or she formulates an etiology to explain his or her diagnosis, or gives a prognosis, they are formulating hypotheses about cause and outcome respectively in the light of all available information about the case in question, from others like it, as well as taking into account all other experimental and observational data that bear on the problem.

To provide this background of scientific information, the four contributors to this symposium will address the following four questions:

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Asbestos and lung cancer: has the case been proven?
(Dr. J. C. McDonald)

The objective of this presentation is to outline the way in which evidence of an association between asbestos exposure and lung cancer has been accumulated over time and to answer the question of whether in the light of this evidence, the association can be considered causal. There is an analogy here to the build-up of evidence relating cigarettes to lung cancer which led the writers of the second (1971) report of the Royal College of Physicians¹ to conclude that "objections to the conclusion that cigarette smoking is a cause of lung cancer . . . are . . . without substance." However, the association between the two had been suspected on the basis of clinical observation in the early 1930s,² and though not mentioned in an editorial in JAMA³ in 1948, was again implicated by the Surgeon-General⁴ in 1959, this time "as the principal etiologic factor." The first Royal College Report⁵ in 1962 reviewed 216 reports, but was not prepared to be more definite than to say that none of the facts "contradict the conclusion that cigarette smoking is an important cause of lung cancer." Subsequently in his report of 1964,⁶ based on the review of 1,011 scientific papers, the Surgeon-General went a step further in cautiously suggesting cigarette smoking was "causally related to lung cancer." (Parenthetically, who would be prepared to answer the legal question "In which year, doctor, was it known that smoking causes lung cancer?")

Attributability in the face of uncertainty. (Dr. P. E. Enterline)

The objective of this presentation is to review the epidemiologic evidence from which attributable risk is calculated and even though this does not permit the clinician to be definite in a given case, it permits him to give an idea of the probability that in the case of his patient, exposure to asbestos was the cause of this cancer.