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AN EPIDEMIOLOGICAL STUDY OF LUNG CANCER IN ASBESTOS MINERS.

D.C BRAUN & T.O. TRUAN.

INTRODUCTION.

This describes the pitfalls in estimating percentages of lung cancer in association with other conditions in small series of cases. Merewether and Gloyne come under criticism for giving percentages of lung cancer in cases of asbestosis when these were only findings revealed at autopsy studies. The notable fact is omitted that Merewether compared the percentage of lung cancer in cases of asbestosis with that found in cases of silicosis. Gloyne did the same with the material he found. In Merewether's case the figures consisted of all the deaths reported in G.B. in asbestos workers and in workers with a silicotic risk who were suspended for asbestosis or silicosis or were significantly exposed and likely to be affected. In Great Britain this procedure is initiated by instructions to Registrar of Deaths to inform the local coroner of deaths in these circumstances. In his first report on the subject in the 1947 Report of the Inspector of Factories Merewether gave the percentage of lung cancer in cases of asbestosis as 13.2 and in cases of silicosis as 1.32. The comparative low percentage in silicosis in this series is not commented on by Braun and Truan. It is also to be noted that none of the British Statistics refer to asbestos miners. Similarly we should be slow to assume that figures relating to asbestos miners necessarily relate to workers in other asbestos processes.

In criticism of the Doll paper Braun & Truan state that "Neither this article nor any previous one that we have examined presents any figures to prove that asbestosis is an infrequent occurrence" (P636). This ignores the Table 4 in the Doll paper in which deaths are given which occurred in this 20 year group from asbestos and other conditions.

Late on (P 636) the authors state that "Gloyne's cases were

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submitted to him for study because the findings were unusual for uncomplicated pneumoconiosis." It is a fact that Gloyne in reporting pathological findings in 132 asbestos workers in 1951 must have examined all the material possible in the London area where he worked. He was interested in the subject and sought out all the material he could find himself. It was not otherwise selected.

Much play is made of the fact that there has been undoubted duplication in figures for lung cancer in the various series quoted. It is significant however that all series of autopsies, however derived, show a proportion of lung cancer in cases of asbestosis ranging from 8.2% to 16%. No similar finding has been made in the case of any other form of pneumoconiosis.

On the general methods of the study it is noted that the cohort included every miner with a total exposure of 5 or more years ~~is~~ regarded as being at risk. This gives a very large exposure group. Of the cases of lung cancer found 16 - 37 years is the range in the proved group and 33 - 42 in the unproved group. This great enlargement of the group by the inclusion of the 5 - 16 years exposed group instead of the 15 years exposed and upwards may have made the proportions found less significant than would have been so otherwise.

PRINCIPLES OF THE EPIDEMIOLOGICAL METHOD.

These are well defined and I do not propose to make comment here.

COLLECTION AND ANALYSIS OF DATA.

Information on the total number of deaths is carefully collected and cases of lung cancer have been sought out from all available sources. The total deaths in the group are not further considered. It is still possible that lung cancer deaths have occurred in cases of asbestosis in which no autopsy was done. In the Rochdale series there were several cases in which a death certificate had been issued without mention of lung cancer in which at autopsy a lung cancer was found. As the total number of deaths other than the cancer ones (169) was not considered

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further we are unaware of how this number would compare with other areas or the whole Dominion with regard to total mortality-rate.

Results and Interpretation.

In spite of criticism of other workers for not defining degrees of dustiness, the only information offered here is that "The degree of dustiness for each job category was determined after consultation with persons familiar with the environment and conditions in the various work areas." No information on composition of dust or dust counts is offered. It would be important to know the relative amounts of rock dust and fibre in the working areas.

22 Tables are offered to show that 9 proved cases of lung cancer, and 3 additional possible cases have occurred in the period 1950-55. This is estimated to be equivalent to a rate of 25.5 per 100,000 man years of risk or 34.0 for the total possible cases. This rate is compared with the rate for Quebec, adjacent areas, Montreal and other areas in the United States. While the rate in miners was higher than in the adjacent country areas it was not statistically different from the rate for Quebec or Montreal. In comparing the rate for the miners with that for the Dominion of Canada the only figures available were up to 1952. In this instance the rate of the asbestos miners over 65 is given as 212 for proved and 265 for possible total of proved and unproved cases. This compared with a rate of 90-95 for the over 65 male group for the whole Dominion of Canada. It is considered that by 1955 the rate would have been larger for the Dominion as rates are rising but the possibility is not further explored.

While reference is made to the presence of asbestosis in the lung cancer cases where it was present in 9 out of 17 cases, no reference is made to the total number of asbestotic deaths. We cannot therefore estimate the number of lung cancer deaths in whole asbestotic groups of deaths or autopsies.

The influence of cigarette smoking on the mortality of the group

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was investigated. It may be significant that no lung cancer deaths occurred in the non smoking group. This was a group smoking less than 5 cigarettes daily or were pipe or cigar smokers.

After observing all the care used in calculating the rates of lung cancer for asbestos miners it seems strange that the authors, forgetting their previous strictures on others for making wide ranging conclusions from insufficient data, should attempt to give a rate for all the lung cancer occurring in asbestos workers all over the world (P 648). This they estimate at 15 per 100,000 and therefore not greater than the unexposed population. Among other facts this calculation completely ignores the effect of the Regulations in Great Britain which have been shown to be considerable ^{or} ~~are~~ the efforts made since 1930 to reduce working dust concentrations in all parts of the world where asbestos is processed. It must, I think, be assumed that some dust suppressive measures have been taken at the mines.

On the figures presented an increased death rate for lung cancer would not seem to have been proved in the case of asbestos miners.

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