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DOCUMENT DESCRIPTION: Transcript of Presentation by Dr. Cartier, Followed by Discussion

TAKEN FROM PAGE 381.

BY DOCTOR CARTER:

Members of this Symposium: Not being a statistician, neither an epidemiologist, I don't think I should have accepted to present this paper, but I think, to excuse myself, I should say that this statistics and most of the papers I am presenting have been reviewed by your statistician in Montreal and Doctor Phillips, official statistician for National Cancer Institute of Canada in Toronto, so I would like that these two experts take the responsibility of the statements I might advance.

So I was invited to present this paper on the pulmonary cancer in the asbestos mining industry, not on account of any special qualification, only because I happen to be in charge of a clinic which has, as a primary function, to supervise the primary condition of four thousand asbestos miners, such a group of entrants offering an

BY DOCTOR RHOADS:

The next paper on the Symposium concerns the paper already discussed by Doctor Hueper. If we could have a little quiet, it would be very helpful for those who are presenting papers. Doctor Hueper has asked to comment on Doctor Drinker's remarks. I think we must defer this until we can get the papers under way.

I will, therefore, introduce the paper on asbestos mining by Doctor Cartier. Doctor Cartier.

BY DOCTOR CARTIER:

Members of this Symposium: Not being a statistician, neither an epidemiologist, I don't think I should have accepted to present this paper, but I think, to excuse myself, I should say that this statistics and most of the papers I am presenting have been reviewed by your statistician in Montreal and Doctor Phillips, official statistician for National Cancer Institute of Canada in Toronto, so I would like that these two experts take the responsibility of the statements I might advance.

So I was invited to present this paper on the pulmonary cancer in the asbestos mining industry, not on account of any special qualification, only because I happen to be in charge of a clinic which has, as a primary function, to supervise the primary condition of four thousand asbestos miners, such a group of entrants offering an

outstanding metallurgical study of cancer of the lung in relation to asbestos fibers or any other related fibers.

In the origin of mines, six different companies are doing asbestos mining operations, so for more than eighty years, and since 1945, these companies have organized the Thetford Industrial Clinic which has, as a primary aim, to fulfill a program of industrial hygiene, mainly medical and with dust control provisions.

In 1950, the concept of an inhalation of asbestos fibers and pulmonary cancer was mentioned by many investigators and it was at that moment that the Medical Advisor of the Quebec Asbestos Mining Association, saw advantages for the employees and the employers, to recommend a company investigation composed of an epidemiological and experimental study.

This report is part of this study.

The Thetford Industrial Clinic has been in operation only since 1946, and we have medical records on five thousand fifty-two employees, but this survey is based only on three thousand nine hundred fifty-seven workers having worked in the industry from two to sixty years. About one thousand employees have been rejected from this survey because they have not worked long enough, or because they have worked in different industrial grades before.

Before presenting the first table, I think it is

worthwhile to say that the labor turn-over in the asbestos industry is one of the lowest in all the industry in Canada, meaning that the stable population is working in our mine and meaning, also, that in many aspects, it is easier to study and more representative.

The first slide please. So as I mentioned, this Table Number 1 shows the age group distribution of the group study and I don't think it needs any comments except to say that the average age of our employees is thirty-five, about two years older than the average for the general industrial population, and this table will show also that 1,577 men are included in the age group from forty to - and over, in the group where the incidence of cancer is more general.

Second -- next table, please. This table indicates the number of years spent in the asbestos mining industry by the total number of employees surveyed. Of course, this table is not as significant as would be a table indicating the specific exposure of these employees, but after many attempts it has seemed impossible to - to add together the different years spent in different concentration of fibers, to which most of the employees have been exposed, and I think as a remark too, it is worthwhile to mention that two thousand, two hundred have spent more than ten years in the asbestos industry.

Next table, please. The following table shows a classification of various exposures in the asbestos mining industry. Realize that this classification could be discussed for many hours, and present many quarrels, but I think nevertheless that we need, for many purposes, we need a job classification, even for the exposure aspect or for research, so after we were stationed with our engineer, we took the average of all the dust survey made in the mining industry and we decided just to draw this table, and this table has also, I don't know if it is objective advantage, but has the advantage of correlating with our case of asbestosis.

I want to state that all the cases of asbestosis have belonged - have worked in shops, under that rule, I'm sorry, in the lower group, and our men having worked even from two to forty-five years in that kind of exposure, has never developed an asbestosis which was found by pathologists or epidemiologists or by experiments, to be of any sequence, any medical sequence.

This table, as you may see, presents million particles per cubic foot and the percentage of fiber count. This is very important, because from experience to experience, it seems that the fiber is the only pathological agent, rock dust not being - not being reproduced in any [illegible] pulmonary fibrosis. I think, only this might

need some further explanation, because you see that is not clear. Even this might seem a little less concentrated, but just the same we put in this whole group, because on the ground, dry work and the grizzly men are working longer, they are working in more constant concentration of fibers, and in the third place, because we have found a few exceptional cases of asbestosis in that group. So, please remember the categories, 0, 1, 2, 3, 4 and 5, because in the coming tables, they might help you to understand them.

The following tables intend to indicate indicence or prevalence of pulmonary cancer in different groups of asbestos workers in comparison to different control groups. The task of selecting significant control group has been, in this case, as everywhere, very difficult. We would have wished to be able to find a group in the province of Quebec, a group in any other comparative - comparable industrial gboup, but it was impossible for the following reason, that in no other industrial cities in Province Quebec, so large a proportion of the adult population is followed medically so closely, because I think I should mention to you that about thirty-three - about thirty percent of the adult population in Thetford are working in the mines, being the only industry, so we can't have a very close supervision of the function of the - of the condition of the lungs.

We tried, with the mass survey, to detect a com-

parable survey group, but I don't think it was or is possible, because in the Province of Quebec, very few adults over fifty years of age are taking advantage of the mass survey. As a matter of fact, the mass survey made in Thetford mines in 1950 by the Provincial Department of Health, did not detect a single case of pulmonary cancer, either in the generic operation or in fourteen miners who have been X-rayed, so having not succeeded in selecting a good control group for the reason just mentioned, we have decided to make comparative study of incidence of the pulmonary cancer in different groups of asbestos workers, which can be studied with the same methods and which, at the same time, would present sufficient characteristics to be significant.

The next table, please. This table indicates the prevalence of pulmonary cancer according to degree of length, to degree and length of exposure and by age. This table shows the prevalence of pulmonary cancer in the group with severe exposure, that is this group, and this is more or less a control group.

This, we have six cases of pulmonary - of primary pulmonary cancer and four cases, in fact, in the group exposed and this, of course, the number being smaller, it gave us a higher incidence, but if we also take that, we have to admit that this difference in incidence is not, has

no statistical value, because it is not more or equal to twice the secondary condition.

Next, please. This table was made at the suggestion of Doctor Pratt, who was interested to know the comparative incidence in group of employee, of employees who have been exposed to a significant degree of exposure, Category 3, 4 and 5, given as less - as one year, and as a control group, we take the group of employees with any kind of exposure, but of the Categories 1, - 0, 1 and 2.

Doctor Pratt had in mind, in suggesting that table, that the factor exposure to severe concentration of asbestos for any length of time might be as significant as the factor asbestosis itself, meaning that if there is a possible causal relationship, the inhalation of sufficient dosage of asbestos fibers might be as important as the factor asbestosis itself and at the same time, I think we have the two extremes.

In the previous slide, we have men with severe exposure, the incidence of cancer, pulmonary cancer in men with severe exposure, and in this - in this table, we have men in the group 2 with very light or very little exposure but with sufficient dosage of - of dust.

Next table, please. This table indicates the prevalence of pulmonary cancer in a series of fifty-three autopsied asbestos workers. This analysis, although not as

important as that of Doctor Merewether of Great Britain, is based on quite a similar basis and I would think that this group is less selective, because that is no section at all. That's all the cases we meant to autopsy after - from fifteen years and over in the industry. Again here, the difference is not as big as it looks, because after using - using the standard there, we came to a difference of about only .5 between the two groups, the group with asbestosis and group with - without asbestosis.

I can not answer why there is less cases of cancer in the asbestotic group, but I think that if we could have autopsy on every employee who happens to die, we might get either a different picture of maybe an indirect explanation.

Next table, please. This table was made for the purpose of knowing if the ratio between the number of cancer deaths outside and the pulmonary cancer deaths was somewhat different from the ratio observed in a few other control groups. First, I think it should be mentioned that ninety percent of the cases for the City of Montreal and a hundred percent of the cases for the City of Thetford Mines, are autopsied, are post mortem cases, so that is why I say it is difficult to compare. I don't know in which proportion for the Province - City of Quebeck, but for the Province of Quebec, the statistician and the

epidemiologist at the same time told me that less than ten percent are post-mortem cases, so this might be not comparable to a large extent, but I think if there was any significance, we should expect to have a bigger variation in the percentages.

Next, table, please. Instead of comparing the annual prevalence on incidence of pulmonary cancer in the population of Thetford Mines with the incidence in other control groups, Doctor Phillips from the National Cancer Institute of Canada has suggested to work this number, this table, which is based on the fact that Doctor Dorning has found in a random population of 48,833, an annual incidence of seven cases for each hundred thousand of population, given a year expectancy of seventy.

On that basis, Thetford Mines, which is average population of 15,000 for the last ten years, should have ten cases between - twenty-five cases of pulmonary cancer, and the actual prevalence for ten years, this ten years, the actual prevalence is nine cases.

In Montreal, with the ten years expectancy of six, six ninety or six ninety-three cases, it has, as you see, eight hundred fifty-six and I think it is worthwhile to mention that in Montreal, the rate since '45, in '45 the rate per hundred thousand of population was only .5, 5.9, and in 1950, it has reached 12.9.

In conclusion, this paper hasn't been, by any means, the intention to bring the final answer to the problem of the final relation between the inhalation of asbestos fibers and the development of pulmonary cancer, but I think that this incomplete study, I must admit, may have found one of the most representative groups of asbestos workers, believing that the data collected in Thetford Mines do not seem to indicate a causal relationship, and that if it be so, that the data do not correlate the data of Doctor Merewether in Great Britain. Thank you.

(Applause).

BY DOCTOR REGADS:

I'm curious to observe the remark of Doctor Cartier of the mass survey employed in his group, did not reveal any patients with early pulmonary cancer. I must presume that the mass survey was not sufficiently large, so if this means, after all, for picking up a disease which is treatable and in many instances curable, may not have been sufficient.

I'm also very curious about the fifty-three autopsied individuals of whom ten had pulmonary cancer. I thought they were autopsied because it was thought they may have had pulmonary cancer. It was not a routine autopsy?

BY DOCTOR CARTIER:

No.

BY DOCTOR RHOADS:

are there any questions on this paper? (No responce). Of course, the implication is clear that there is no danger of pulmonary cancer from the workers in this particular group, and perhaps you are right. It appears to me that asbestosis is a very healthy ailment as far as cancer is concerned. There seems to be no discussion.

BY DOCTOR PLATTE:

My name is Platte from Kirkman Lake. It's essentially a gold mining district. We now have an asbestos mine in the Town of Banville near Madison. I'd like to ask the doctor what his first signs - I mean it has nothing to do with cancer - but what he looks for for indications of trouble from asbestos?

BY DOCTOR RHOADS:

The question is, what are the first indications of trouble from asbestos exposure. Can you answer that, Doctor?

BY DOCTOR CARTER:

I don't think there is any specific symptoms except as actually changes in the - if the fibrosis is extensive enough, that is dyspnea and cyanosis, of the extreme degree, but that is, for asbestosis, in my experience, we have had about - I can mention, we have ninety-eight cases of asbestosis in our group and only the group with marked

exposure and many - for many years, and many times when they start to reach fifty-five and over, they are more dyspneac, and I think the main thing, the resistance to it, they seem to die more rapidly once they reach fifty, seventy years without much of any disease. Within a few months, they go down the hill very rapidly.

BY DOCTOR RHOADS:

What do they die of?

BY DOCTOR CARTIER:

They die, some from cardiac and from generalized miscellaneous diseases, and some from bronchiectasis, but I don't think, in my experience, there is any special picture except that in a few, in two or three months, they go down very rapidly.

BY DOCTOR RHOADS:

Doctor Vorwald would like to comment.

BY DOCTOR VORWALD:

I'd like to comment just a bit. We have been encouraging Doctor Cartier to continue or pursue this study in the rather isolated population in Thetford. We are presently conducting a similar epidemiological survey in a neighboring city, also engaged in the mining of asbestos. Of course, I think you realize Doctor Cartier's difficulties in a community such as Thetford, where he must rely upon the material available to him, and we debated how the

incidence of cancer in his exposed population in Thetford might be identified, and we have suggested, as he did, reviewal of the chest Roentgenograms, of all these cases, the Roentgenograms having been taken during the last period of fifteen years. Admittedly though, there will be a number of cases of pulmonary cancer missed by that method. We have considered sputum examination of a large population such as that, but at the moment, the best we can do was survey and study the chest Roentgenograms of this large series of individuals exposed to a special industry.

BY DOCTOR RHOADS:

And you did not pick up any cancer, I take it, in so doing?

BY DOCTOR CARTIER:

Oh, yes, from the X-ray.

BY DOCTOR RHOADS:

From your survey?

BY DOCTOR CARTIER:

Yes - no, not from mass survey; all the cases have been detected in the clinic.

BY DOCTOR RHOADS:

I'm a little puzzled about this. This can be a very interesting topic. You say mass survey didn't do it but the review of Roentgenograms taken when individuals applied for medical care?

BY DOCTOR CARTIER:

No, that's a routine examination at the clinic.

BY DOCTOR RHOADS:

How does that differ from the mass survey?

BY DOCTOR CARTIER:

I think it differs in that the people over fifty years of age do not take advantage of the mass survey, but at the clinic, all the cases have been detected at the clinic and after that they have been followed up, and we have the cases of post mortem.

BY DOCTOR RHOADS:

This indicates what we have referred to before in a number of discussions at this point, that somehow the mass survey doesn't come through to the actual detection and use of the detection facility in bringing the patient into medical hands always.

Any further discussion? (No response). If not, we'll proceed to the next paper. Doctor Kenneth Lynch, as you know, is Professor of Pathology and Dean at the Medical College of South Carolina. Doctor Lynch.

BY DOCTOR LYNCH:

(Doctor Lynch read a prepared paper which is on file at the Saranac Laboratory.)

BY DOCTOR RHOADS:

Thank you, Doctor Lynch, for a very orderly and

TAKEN FROM PAGE 394.

[illegible]:

Thank you, Doctor Lynch, for a very orderly and

interesting presentation. I hoped to be able to make a pertinent comment, but Doctor Lynch disposed of that in the last part of the talk. I gather there is no correlation between the extent of asbestosis in your series and the occurrence of neoplastic change?

BY DOCTOR LYNCH:

In our series, Doctor Rhoads, the three cases, now, remember there are only three - occurred in advanced cases of asbestosis, not in minor conditions where you merely make a diagnosis because the asbestosis might be present.

BY DOCTOR RHOADS:

I would ask those who are going out if they wouldn't mind waiting until we take the photographs in just a few minutes. Doctor Vorwald, we're anxious to keep all possible here for the photograph.

Is there other discussion on Doctor Lynch's paper? I hear no discussion. Doctor Vorwald and I both feel, because of the time and the need for taking the photograph, we had best postpone Doctor Moreweather's paper until after lunch. Doctor Vorwald, do you care to speak about the photograph?

BY DOCTOR VORWALD:

Yes, we would like to take a photograph of the group as we are seated here. Is the photographer here?

(No response).

Now, if those of you who are in the back, could you come forward so that we can really get a picture. There are a lot of seats up forward and it will only take a few minutes.

I might say that the photographer will print these pictures and you may buy one from him if you so wish; on the bulletin board outside will be a paper where you might indicate whether you want one or a dozen.

(Photograph was taken, after which the meeting was adjourned. Session reconvened at 2:37 P. M.).

PNEUMOCONIOSIS AND PULMONARY CANCER (Continued) 2:30 to 5:30 P.M.

Chromate Workers

Anthony J. Lanza, M. D.

Discussion

Experimental Pulmonary Cancer - General Review

G. Burroughs Mider, M. D.

Discussion

Pulmonary Cancer in Experimental Exposures to Chromate

Anna Baetjer, Sc.D.

Discussion

Pulmonary Cancer in Experimental Exposures to Beryllium

Arthur J. Vorwald, M. D.

Discussion.