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Pneumoconiosis and Pulmonary Cancer

PNEUMOCONIOSIS AND PULMONARY CANCER

Chairman: C. P. Rhoads, M. D.

Philosophy of Biostatistics as Applied to
Environmental Pulmonary Cancer

Morton L. Levin, M. D.

Discussion

General Review

W. C. Ruesper, M. D.

Discussion

Asbestos Miners

Paul Cartier, M. D.

Discussion

Asbestos Weavers

Kenneth M. Lynch, M. D.

Discussion, led by E. R. A. Merewether, M. D.

BY DOCTOR VORWALD:

Ladies and gentlemen, it's past time to begin. We're behind schedule by twenty minutes. We hope that we will proceed in making up this time during the course of the day. I will admit it's a very tight schedule, but with the leadership of our chairman, I am sure that we will accomplish our objective for today.

Before we begin formally, there are just, again, a few announcements which I must make. I call your attention to the banquet tickets for tomorrow and also the

gathering at the Hotel Saranac tonight on colored photography, by the Ansco Laboratories.

In addition, there is a book here which was left on the seat. It is a brown book full of notes. I should like to read the notes, because I think I might glean in there some of the weaknesses of our Symposium, but nevertheless, here is the book. It has no name and I'm hoping that whoever owns it might, might get it here, so I'll put it right on the table.

With that then, we open our today's sessions on pulmonary cancer, and pneumoconiosis, from the inhalation of dust, and I think it follows logically, this topic follows logically along the same lines as we were discussing yesterday.

The Chairman for today's sessions is Doctor Rhoads, whom you know, and Doctor Rhoads is the Director of the Memorial Center for Cancer and Allied Diseases in New York City, and Director also of the Sloan-Kettering Institute for Research Study of Cancer. With that, Doctor Rhoads.

BY DOCTOR RHOADS:

Doctor Vorwald and Guests: I appear before you in a distinctly singular position. I have not been identified with the field of pulmonary cancer, nor with exposure to dust inhalation. I am in an always very difficult and

TAKEN FROM PAGE 335.

BY DOCTOR REYNOLDS:

Doctor Verweid and Guests: I appear before you in a distinctly singular position. I have not been identified with the field of pulmonary cancer, nor with exposure to dust inhalation. I am in an always very difficult and

much publicized position of research director, that unhappy type of individual trying to persuade or threaten individuals to do what he thinks they ought to do. He always finds this very difficult indeed, of course, if not impossible.

However, I was very happy to be able to accept Doctor Vorwald's invitation, because in our group and other groups associated with us, have come certain aspects of work which pertain, I think, to your interest and to the field of pulmonary cancer. I have no comments in the field of statistics, and so will leave that important topic to those who will present papers.

I was impressed, however, with the program, to observe what seems to be a strongly inclined point of view toward the purely industrial hazard aspect of this problem and perhaps less attention given to diagnostic, therapeutic and experimental considerations, which perhaps play an interesting role.

Until we can, through your efforts, eliminate the cause of this very serious condition, we must consider what can be done better to handle it once it has occurred.

We have been interested, in our institution, in the development of techniques. We permit study of therapeutic problems relating to pulmonary and other environmentally induced cancer. We are very happy, some years ago, to be able to provide facilities for Doctor William Smith,

which have permitted the development of highly precise and satisfactory techniques for carcinogenic principals.

Many of us have felt that that enterprise subsequently conducted at New York University, in the Medical Department, has provided important data, indeed principals which may lend themselves to study of pulmonary as well as other environmental types of cancers. I refer, of course, to the study of that form of cancer induced in experimental animals and conceivably in man, by the positive action of high temperature catalytic agents, fuel oil.

Doctor Smith and his associates were able to demonstrate the cause of these activities of these compounds of this material, and of certain compounds contained therein. There are strong suggestions that no one pure compound induces the neoplastic change, but rather a combination of several. There was also strong evidence that this combination of materials will induce cancer in the primate, which I regard as an important advance.

If we have, then, the principal of possible multiple origin or whole carcinogenesis, that provides at least leads for further investigation. We have also been happy to have with us Doctor L. Winter who came subsequent to his major observations with Doctor Ames in St. Louis. I am a strong defender of Doctor Winter, whom I regard as an energetic and reliable worker. I am aware that his statistical

has - have been brought into question, but his tables, his data, with those of others, would seem to many of us to provide adequate evidence to suspect the inhalation of tobacco smoke from cigarettes as a participating etiological factor in pulmonary neoplastic disease. Doctor Winter has never, as far as I know, claimed that this was the only factor, but only that it is an important one which justifies further study. We have been fortunate to have certain observations which we think may give techniques suggesting the possibility of further study, both of etiologic, of a prophylactic and a therapeutic nature.

May I have the first slide, please? I am going to show just a few slides which indicate certain areas of study, and of thought which may amplify the topics of today's discussion. I presume that you have all seen the article of Stott's which appeared in the summer issue of the *Bray's Journal of Cancer*. If you have not, for your interest, I throw it before you, because it does amplify those studies of the individuals who have been concerned with smoking as etiologic and pulmonary canceration.

This is the chart of the London areas and suggests very strongly a concentration of pulmonary cancers in those areas heavily contaminated with industrial smoke and a trend toward the areas to which the prevailing wind blows. This may, in the opinion of Stotts, which seems to be well

established by the evidence, provide an additional factor to the one referred to by those concerned with cigarette smoking. And I would like to emphasize again the possibility of multiple factors in the etiology of pulmonary neoplastic change.

Doctor Winter has allowed me, since he is in Europe, to present one example of cancer in the experimental animal, induced with the production of the burning of cigarettes under circumstances which are considered to be related or reasonably close to those which obtain in man. True cancer now has been induced by these pellets and it is hoped that it will enable us to go forward to a more exact knowledge of the physical circumstances involved in smoking, to be developed, and more adequate evidence concerning the nature of the active principal and the mode of its production and the mode of preventing the lesions thereby caused, can be had, but this is a true cancer in the experimental animal, caused by cigarette smoked tar.

Now, we have an important area in the early diagnosis, and I hope that those concerned with public health measures, Doctor Levin and others, will refer to the question of how well we can pick up treatable disease by mass survey. In our own experience of about one hundred fifty to two hundred patients a year, with pulmonary patients, we find that the pick-up that comes to us from that survey is

comparatively limited, but there is a very active pick-up from armed service examinations and from examinations in the doctors' offices or the hospital.

This suggests some practices in bringing before the practitioner, the importance of considering neoplastic change as etiologic, as possibly suspicious of any pulmonary lesion, and I do hope we will learn more of early diagnosis by means of mass survey techniques.

Next slide. Of course, in our particular interest, we are deeply concerned with getting a symptomatic disease in a stage where it's still treatable and we're very happy to be able to report that steadily the incidence of operable disease increases, in part because of the greater competence of the surgeon and to some extent perhaps, because of the early rendition because of adequate diagnostic measures, and these are very important factors from the standpoint of the life of the affected individual.

So, we are now working on some thirty percent of the patients who present pulmonary lesions. Now, very happily, we have been able to define - to devise and apply a more radical technique of surgical removal. For many years, it was regarded as impossible to attack the lesions involved, and, of course, it is their involvement which renders the cure rate so low in pulmonary cancer. Daszda, Hand, Watson and associates, have devised a procedure now

in general use, which includes in the red line, accessible mediastinal nodes and some fifty patients have been subjected to this radical dissection, applying the principal, the same principal of bi-section which has been so successful in X-ray surgical patients in cancer.

And, we are able to report at this time, some suggestion of to what extent this may be an advance. It's not a very emphatic suggestion, and we have no idea what will be the factor at the end of the five-year period, but we are satisfied, as testified by the slide, that once the disease had gone beyond the nodes directly contiguous to pulmonary tissue, it is hardly worthwhile to carry out these elaborate bisections.

On the other hand, we are satisfied that there is good reason, at least, at present, to attempt to remove directly contiguous involved nodes, because we do have these four individuals who, otherwise, would have been fatalities, who may well have been benefitted by this rather radical operative process.

Next slide, please. I have been very much concerned and my associate, Doctor Southam, in the whole question of potential chemotherapy of pulmonary cancer. As Doctor Margus remarked to me, it is conventional to say it is cancer and nothing to be done. Of course, it is true that it is not treatable, the patient will not be cured, but

when a man comes to you desperate with dyspnea, deeply cyanotic, because of superior mediastinal pressure from his lung cancer, he is gratified and thankful if you can provide him even a few months or weeks of relief. This can be done in many instances today, with those conventional therapeutical - hemotherapeutical agents of the tri-millimeter service, which you are all familiar with, and I simply throw on these slides to indicate the evidence that there is a transient therapeutic result to be obtained and this should not be sneered at.

In one sense, it indicates that with careful care, we can achieve better therapeutic results, and secondly, the possibility of relieving a desperate situation for weeks or months, should be considered.

We have all been seeking methods by which we could extend the efficiency of hemotherapeutic attack. This has involved some procedure which would allow reproducible experiments on human pulmonary cancer. In our laboratory, Doctor Toolan has been successful in drawing epidermoid cancer of man of a variety and type, in the experimental technique, and applying this technique employing essentially successful hemotherapeutic methods.

This (slide) is a low power of a bronchogenic from man as removed in the operating room. This (slide) is a high power -- I'm thinking of no professional diagnosis,

-- and here, after two weeks of experimental animal, low power, and the next slide, the same preparation high power, two weeks in the animal. This can be done quite regularly and lends itself candidly to various factors and techniques.

Now, this is an example of how epidermoid cancer, this is not a lung - in the experimental animal, cancer planted in the radiograph, can be destroyed completely either by hemotherapeutic or viral means. This is a destroyed implant of human epidermoid cancer.

Similarly, we are making great efforts to grow human pulmonary and other forms of epidermoid disease in tissue culture. It can be done not as well as we would like and this is an example. This is epidermoid disease, but not pulmonary, growing in tissue culture at the end of a ten-day period.

And this (slide) is - this is the treated culture, the first, the one before the control, infected with a virus suitably adapted to the destruction of certain forms of human cancer under artificial conditions, and you will observe that the cancer cells have been destroyed leaving the normal cells. This can not be done in every form of human cancer, but it can be done with a good many and we hope that they will come to light through the development of these techniques, with better diagnostic, better therapeutic

methods and then we will wait for you gentlemen to give us prevention of the disease entirely.

Now, the first paper is Doctor Levin's. You're all familiar with his great contribution to this field, and I personally have waited with great interest, his analysis of the data which bear on the environmental pulmonary cancer. Doctor Levin.

BY DOCTOR LEVIN:

Thank you, Doctor Rhoads. Ladies and gentlemen, I am supposed to talk to you on the philosophy of the biostatistics of environmental pulmonary cancer, and I have never been sure, up until this moment, whether I was supposed to concentrate on philosophy or biostatistics or environmental pulmonary cancer. I shall probably try to do all three, and succeed in neither of them or not one.

I certainly would like very much to second the remarks of Doctor Rhoads as made and perhaps I can do so and make some comments on some of the things he has said, by telling you what my own point of view is in this matter.

It is primarily that of an epidemiologist which is the field in which I received most of my medical training. An epidemiologist, as you probably know, is not a statistician necessarily, although he has to know something about statistics and use them and know when he is in trouble, some - so he can go to someone who is a statistician.