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Do We Have to Give Up Smoking?

Leonard Engel

An impartial and experienced medical writer examines the available evidence on both sides of the lung cancer controversy—and explains why he has not yet given up cigarettes himself.

EVERY few weeks, a neighbor of mine steps across the lawn from his house and pokes his head into my window. He is a physician on the staff of a hospital where a great deal of lung cancer surgery is done.

"Quit smoking yet?" he asks as he lights up.

"I'm waiting for you to stop," I reply.

And he says: "Well, I think I'll wait a while yet."

The point of our periodic exchange is that the physician is neither a temporizer nor a weak-willed slave to habit. He would quit smoking if he were convinced that smoking was a menace to his health. He is aware, however, that there is another side to the cigarettes-and-lung-cancer controversy, and that the case against cigarettes is by no means proved. A substantial body of evidence argues strongly, in fact, that cigarettes have little or perhaps even nothing to do with cancer of the lung.

To many, it may come as something of a surprise that the cigarette-and-lung-cancer question *has* two sides. Since 1950, when Drs. Evarts A. Graham and Ernest L. Wynder reported a preponderance of heavy smokers in a group of nearly seven hundred men with lung cancer, the vast machinery of press and radio has operated to blot out doubts. The idea that cigarettes are responsible for lung cancer (and perhaps are involved in other forms of cancer and heart disease as well) has been hammered home by titles angled to catch the reader's eye—for example, "Cancer by the Carton"—by headlines that necessarily omit "maybes" and "possiblys," and by an avalanche of books and articles on how to stop smoking. Ill-advised advertising claims by the tobacco companies that one brand of cigarette is less hurtful than another have added fuel to the fire. The implication that all of them must be more or less harmful has not been lost on the public.

There is no doubt that smoking is dirty, expensive, and no contribution to physical health. (I shudder to think of how much I've spent on cigarettes in twenty years of smoking and of how much tar is deposited in my lungs.) But "dirty, expensive, and unnecessary" are hardly synonyms for "dangerous"; nor are they justification for not examining the other side of the cigarette-and-lung-cancer question.

For that reason, I am going to set down,

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who hold government life insurance. As insurance claims are filed with the Veterans Administration, copies of the death-certificate are sent to the institute.

Thus far, not enough time has passed to show the trend of deaths in this group of veterans. In the American Cancer Society study, however, an older age-group was used. There have already been enough deaths here to show several trends and to cause a nation-wide sensation when a preliminary report on the study was made at the meeting of the American Medical Association in San Francisco last June.

In the ACS study, which was directed by statisticians E. Cuyler Hammond and Daniel Horn, volunteers interviewed over 200,000 white men between the ages of 50 and 69 in the winter of 1951-52. By October 31 last year, there had been 4,854 deaths among the 187,766 on which it was possible to secure follow-up reports. Cigar- and pipe-smoking were found to have little effect on death rates. Cigarette smokers, on the other hand, had a substantially higher death rate not only from lung cancer but also from other forms of cancer and from disease of the coronary arteries. Moreover they had a higher over-all death rate.

A total of 3,002 deaths occurred among the 107,822 who smoked cigarettes regularly —52 per cent more than there would have been if cigarette smokers died at the same rate as non-smokers. Coronary artery disease claimed 1,386 cigarette users—an excess, in some age-groups, of 100 per cent over non-users. Excess mortality of up to 100 per cent from other cancers was also recorded for cigarette smokers (mainly in the older age-groups, however). And 143 of the regular cigarette smokers died of lung cancer—more than three times the rate among non-smokers.

The British Findings

THE British Medical Research Council study—conducted by Dr. Richard Doll, a physician, and Professor A. Bradford Hill of the London School of Hygiene and Tropical Medicine—followed 40,000 English physicians for two and a half years after recording their smoking habits. All 35 deaths from lung cancer among the 40,000 occurred among smokers (mainly cigarette smokers, but also some pipe and pipe-and-cigarette smokers). Further, a direct relation was found between the lung cancer death rate and the number of cigarettes smoked daily. And cigarette smoking was again associated with an excess of deaths from coronary artery diseases.

In the meantime, other investigators were seeking to connect cigarettes and lung cancer experimentally. The experiments that have attracted the greatest attention were performed by Drs. Graham and Wynder and Adele Croninger of Memorial Center and Washington University of St. Louis, and by Dr. J. M. Essenberg of the Chicago Medical School.

The Memorial-Washington University group painted the shaved backs of CAF-1 mice—a pure-bred strain much used in cancer research—three times a week with cigarette-smoke tar obtained from cigarettes puffed down, sixty at a time, in a Rube Goldbergian laboratory machine. In seventy-one weeks of tar-painting (the equivalent, according to Dr. Graham, of thirty to fifty years of smoking in man), skin cancers were produced in thirty-six out of eighty-two animals. Twenty-five of the mice that developed cancer were females and eleven males—a reversal of the usual sex ratio in human lung cancer—but the cancers were of the epidermoid type prominent in lung cancer.

DR. ESSENBERG placed mice of an albino strain with a hereditary susceptibility to lung tumors—a necessary choice of animal, since lung tumors cannot be induced in many strains by any known means—in a chamber with a device that smoked a cigarette every hour for twelve hours each day. The animals lived in the chamber for a year to fourteen months. At the end of that time, 87.5 per cent had developed lung cancer, as against 59.4 per cent of a group of animals treated similarly except for the exposure to cigarette smoke. The difference was "statistically significant," *i.e.*, probably a result of the experiment and not of chance.

As a consequence of these and other studies, the American Cancer Society now takes the position that "smoking does, to a degree not yet determined, increase the likelihood of developing lung cancer." So do several other agencies with a responsible interest in the

The experimental evidence against cigarette smoking is no more convincing to many investigators than the statistical evidence. Their primary reason for skepticism is that neither lung nor skin cancer—nor any other form—has been induced by tobacco smoke or its tars in animals whose resistance to cancer is comparable to man's. Tumors have been induced only in supersensitive animals. Thus, tumors have been induced in selected animals even by olive oil and glucose, the principal sugar of mammalian blood and tissue.

"This does not suggest that olive oil and glucose are carcinogenic," says Dr. Kanematsu Sugiura, one of Memorial Cancer Center's principal investigators of carcinogens. "It suggests only that there is something wrong with these animals."

Moreover, no specific chemical substance identifiable as a carcinogen has ever been isolated from tobacco or its smoke. (Though benz-pyrene, a well-known carcinogen, seems to be present in tobacco tar under certain special conditions, it is generally thought not to be found in the usual circumstances of smoking.) Yet it is sometimes implied that the failure to find a tobacco carcinogen is due to want of trying, and that current research will soon turn one up. Tobacco carcinogens have been sought, however, over many years and in numerous laboratories. The failure of these efforts—in contrast to the successes achieved in identifying carcinogenic agents in coal tar and other materials—has persuaded many cancer researchers that tobacco is either an exceedingly weak carcinogen or none at all.

IN THE opinion of investigators like Dr. Hueper, the greatest weakness in the thesis that cigarette smoking has an important part in cancer of the lung is the lack of medical evidence connecting them. As a rule, carcinogenic agents bring about cancer in a fairly characteristic way. There is a distinct group of non- or pre-cancerous symptoms indicative of damage to tissues. Most tissues exposed to the agent are affected, at least to some degree. This has not been observed, Dr. Hueper finds, in the case of cigarettes.

"It is surprising," he remarked in a paper before the International Cancer Congress in São Paulo, Brazil, last summer, "to note the lack of positive statistical associations between lung cancer and cigarette cough, although this latter symptom is clinically characteristic of chronic chain smokers. Despite the fact that the lips and oral mucosa are constantly bathed in the tarry liquor oozing from the tip of the cigarettes and despite the contact of these parts with the smoke coming from the cigarettes, there is no statistical association with cancer of these parts. The claim that no tarry material exudes from the cigarette tip cannot be taken seriously considering the well-known fact that chronic cigarette smokers have notoriously dark brown stained fingers.

"There is, on the other hand, not a single case of cancer of the fingers attributable to cigarette tar available, which would form the equivalent to the numerous cases of coal tar cancers of the hands placed on record. The claimed absence of a positive association between lung cancer and the habit of inhaling cigarette smoke also is inconsistent with the rule that the incidence rate of occupational cancers increases with the intensity of exposure to a carcinogen. Medical considerations on cigarette smoke and cancer of the lung thus reveal a number of serious and fundamental defects and contradictions."

What Does It Add Up To?

THIS summary of both sides in the cigarette-and-lung-cancer controversy leads to two observations. First, there *is* a statistical association between cigarette smoking and cancer of the lung. It seems to me that the statistical criticisms raised by Drs. Hueper and Russ obscure, but do not refute, the findings of the American Cancer Society and the studies of the British Medical Research Council.

But the association is, so far, largely statistical; at any rate, the experimental and clinical evidence has not yet convinced physicians and scientists who include some of the world's most experienced cancer investigators. The question, then, is, what does the statistical association signify? Does it really signify a cause-and-effect relation between the cigarette habit and lung cancer?

It may. The lack of corroborative experimental and medical evidence may simply mean that the evidence hasn't been uncovered