

## MEDICINE

# Body Itself Fights Tumors

THE BODY appears capable of producing some resistance to tumors, but the exact manner in which this is done eludes scientists.

There is little doubt that immunological responses to human tumors do occur, Dr. George E. Moore of Roswell Park Institute, Buffalo, N.Y., told science writers attending a seminar in Louisville, Ky., sponsored by the American Cancer Society. See *SNL*, 77:227, 1960. On the subject of cancer immunity, Dr. Moore said observations of many different cases of cancer support the view that some humans are capable, for as yet unknown reasons, of resisting their own cancer growths. He cited the following examples:

1. There are a few cases where the tumors stopped growing or even disappeared without benefit of treatment.

2. Many patients have survived for a long period despite incomplete removal of their malignancy.

3. Numerous tumors have spread to other parts of the body after the original tumor was successfully treated, but they appeared many years later. Scientists suspect that these newly spread tumors gained their foothold only when some natural defense mechanism broke down.

4. A few tumors that have spread throughout the body will stop growing or be inhibited when the main tumor is successfully removed or otherwise treated. This has led scientists to suspect that with the main tumor growth removed, the body's natural resistance can better attack the smaller tumors.

5. Thousands of tumor cells spill into the blood stream and lymphatic system but each of these cells does not result in another new tumor.

6. Antibodies that attack tumors have been found in a small number of cancer cases.

7. Very few patients have been able to accept a transplant of their own tumor tissue to another place on the body, which should normally be possible unless some unknown is fighting this switch.

Abnormal cells in the human may be produced by a wide variety of chemical and physical agents such as X-rays, abnormal nutrition and possibly viruses, all of which can result in cancer.

Tumors may range from those that are capable of surviving only because their cells are much like their neighboring normal cells to those that are radically different from normal cells. These can grow so rapidly that they are able to survive despite any natural resistance the body can muster against them.

Any vaccine that might be developed in the near future would probably control only the rapidly growing tumors, Dr. Moore predicted.

## Cancer "Barometer"

A "SEX HORMONE barometer" that could measure the productivity of the sex glands

and serve as a warning against the development of breast cancer was described at the seminar.

Cancer of the breast, the most common of all human cancers, might some day be controlled if each sex hormone could be identified and its role in the human body determined. Then it might be possible to measure the levels of these hormones and control the amount of each so that the tumors would be deprived of the exact amounts of each needed for their growth.

Steroids, the hormones secreted by the sex glands, are big "promoters" in the development of breast cancer in humans, Dr. Thomas L. Dao of Roswell Park Memorial Institute, Buffalo, reported. All breast cancers need this hormonal environment for growth. This does not mean, however, that hormones are the cause of breast cancer, he cautioned.

His studies with rats revealed they developed breast cancer in a manner similar to humans. For instance, when rats with breast cancer became pregnant, their tumors grew more rapidly because of the abundance of steroids being produced during pregnancy. On the other hand, the breast cancers tend to grow smaller or more infrequently after pregnancy, when steroid production is reduced.

Dr. Dao injected male rats with a substance known to cause tumors, 3-methylcholanthrene. Only one percent of these rats developed mammary cancers. He then transplanted to them the ovaries from their sisters. Breast cancer developed in 60% of these males.

He also discovered that if the cancer-causing substance is injected into rats after they become pregnant, the number of tumors that form is considerably smaller than the number that form when the injected rats are not pregnant. Thus, pregnancy appears to protect the rats from developing breast cancer. Since this is also the case with women, Dr. Dao believes this avenue of investigation may be a fruitful one in the near future.

## Link Virus and Leukemia

EVIDENCE that virus is an essential factor in causing human leukemia was presented by a Chicago researcher at the Louisville, Ky., science writers' seminar.

Dr. Steven O. Schwartz of the Hektoen Institute for Medical Research, Cook County Hospital, said a cell-free extract he had taken from the brains of persons who died of leukemia had produced leukemia in mice.

The same material produced an antibody-like reaction in human volunteers in whom this cell-free extract was injected. Blood serum taken later from these volunteers was capable of protecting mice against leukemia from the original agent, Dr. Schwartz said.

The presence of virus in the brain tissue from which the effective extracts came was established by studies with the electron microscope.

Dr. Schwartz emphasized that his research had satisfied all four basic postulates for linking a disease to a causative agent. He listed these as obtaining the agent from human disease, inoculating it into an animal, reproducing the original disease and recovering the disease agent.

One criticism of the work of Dr. Schwartz was offered by a virus expert attending the meeting. He pointed out that Dr. Schwartz might simply have a non-specific reaction. He maintained that the Chicago researcher failed to collect a cell-free extract from the brains of persons who have not died from leukemia. This extract could be injected in other human volunteers.

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