

MEDICINE

Breast Cancer Cause

New research in England indicates that a deficit in male hormone production may be a cause of breast cancer and a key to its detection, Faye Marley reports.

➤ A POSSIBLE CAUSE of breast cancer is reported discovered in England, and prediction of occurrence of this deadly disease is considered possible even before it can be seen by the most powerful X-rays. Successful treatment of cases is also an expected outcome.

A defect in hormone production is the key to the detection and what also is thought to be at least one cause of breast cancer.

Experiments are underway to test this cause, prediction and treatment of cancer based on the new British research.

A team of medical researchers from the Imperial Cancer Research Fund and Guy's Hospital, London, reported this research in *Lancet*, II, 1235, 1962. Queries to American authorities in Washington, D. C., who have not had time to study the work, brought expressions of interest.

A defect in androgen, male hormone, production was discovered through studies of its excretion in the urine of women. This defect is believed to be a cause of breast cancer.

Overproduction of estrogen, the female hormone, has been shown to cause breast cancer in laboratory animals, and the researchers point out that a defect in the male hormone production coupled with a normal

rate of female hormone production may be as important in the cause of breast cancer as an overproduction of estrogen. Women normally produce small amounts of the male hormone.

Some of the patients with early breast cancer showed a subnormal output of androgen metabolites that "may have preceded the clinical appearance of the disease and may even be linked with its causation," the investigators said.

Because the hormone chemicals from the adrenal and pituitary glands have been related to breast cancer, one or the other of these glands has frequently been removed, especially in women with spreading, or metastatic, breast cancer. In the London study, the disease in 29 women failed to respond to the glandular operation, whereas 17 showed regression.

In the case of those who failed to respond to removal of the adrenal or pituitary glands, the urinary excretion of steroids was plainly abnormal. The responsive patients and the normal women tested had normal excretion of steroids. The researchers were Drs. R. D. Bulbrook, J. L. Hayward, C. C. Spicer and B. S. Thomas, all of London.

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leukemic white cells and many other cell types.

The report predicts that it may be possible to produce lasting changes in cells by the deliberate introduction of appropriate DNA. This is a method that undoubtedly will be explored in hope of finding ideas useful in future cancer treatment.

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High Voltage Engineering

RADIATION MACHINE—Shown is a model of the new 81-foot 20-million-electron-volt model MP tandem Van de Graaff particle accelerator being built by High Voltage Engineering Corporation. The machine will be used for nuclear structure research. It will accelerate beams of protons to velocities greater than 133 million miles per hour.

MEDICINE

Viruses Evil Messengers

➤ CANCER is not caught in the same way that germs cause tuberculosis or typhoid. The modern idea is that viruses are related to cancer like evil messengers who start good healthy cells on disastrous careers.

The new concept, described in the 15th progress report of the Sloan-Kettering Institute for Cancer Research, New York, makes the old arguments about whether or not viruses "cause" cancer out of date.

Although there is no conclusive evidence as yet that any form of cancer in humans is brought about by a virus, many viruses have induced cancer in animals since the first tumor virus in fowls was discovered in 1908.

Studies with polyoma virus, isolated from mouse leukemia, have shown that although healthy animals were found to develop infection with this virus when exposed to infected animals, they did not develop cancers. Only when the virus was introduced under special experimental conditions by man did cancers grow.

The link between cancer and viruses may be as strong as the coil of life itself, since the word virus, like the familiar words genes, mutations and cancer, has shifted its meaning. Viruses to today's scientists are

no longer considered the "contagious living fluid" of the early 1900's when they were regarded as merely small bacteria, but they are essentially infective nucleic acid wrapped in a protective protein jacket.

The nucleic acid is the only part of the virus that enters the cell, and in some of the viruses that cause cancer in animals this viral nucleic acid appears to become part of the cellular chromosome. In this way the nucleic acid bestows new characteristics on future generations of the cell population.

No matter what causes cancer, the disease is ultimately the result of a change in the chromosomal nucleic acid (DNA or deoxyribonucleic acid) of the affected cell. This unifying concept of cancer was expressed by Dr. Frank L. Horsfall Jr., director of the Sloan-Kettering Institute, and the report emphasizes the work going on at the Institute to explore the relationship between the nucleic acids of the host cell and viral DNA introduced into the cell.

New methods for the study of DNA are being developed. Already DNA from human sperm, the prototype of infective DNA, has been isolated, as well as DNA from human

ZOOLOGY

Dolphins Have Special Whistle to Call for Aid

➤ A SPECIAL pair of whistles is sounded by a dolphin in distress which bring animals in the neighboring area to its rescue, Dr. John C. Lilly, Communication Research Institute in Miami, reported in *Science*, 139:116, 1963.

When the other dolphins hear the pair of whistles, the first going from a low to a high sound and the second from high to low, they stop all noise until the animal making the sound is found. The rescuer pushes the head of the injured animal to the surface for breathing and then receives first-aid directions from the injured.

The animals show numerous means of keeping a sick animal upright in shallow water.

When a sick animal was isolated from the other dolphins, it died. All sick animals in a group of 23 from different areas in Florida lived, with the exception of two, when they were cared for by other dolphins, Dr. Lilly reported.

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