VIROLOGY

Leukemia Virus Sought

Research is in progress to find a virus that causes leukemia in humans, and to develop vaccines against other virus diseases—By Faye Marley

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➤ NO EARLY BREAKTHROUGH is foreseen in the fight against leukemia, but hopes now are high that present animal experiments will lead eventually to finding a virus that causes this cancer of the blood-forming organs.

Leukemia, which in its acute form is fatal, is particularly deadly in young children.

Dr. John B. Moloney of the National Cancer Institute, Bethesda, Md., said the electron microscope is helping to give a clearer comparison of viruses in the blood of human leukemia patients with those in mice, hampsters and other experimental animals.

The electron microscope picture on this week's front cover shows Moloney leukemia viruses between two cells of a section taken from the mesenteric nodes of an infected mouse. The picture of the greatly magnified section clearly reveals the outer shell of the virus, the dense nucleoid, and the tail-like structure sometimes apparent.

Although viruses are reproduced inside the cell, they can be recognized clearly only when they appear outside it, as in this picture.

Dr. Moloney spoke to science writers at a seminar on virus research at the National Institutes of Health (NIH), Bethesda.

Less promising is research toward vaccines for the 75 viruses causing colds and respiratory diseases, said Dr. Robert M. Chanock, chief of the respiratory unit, laboratory of infectious diseases, NIH.

The first virus discovered, Dr. Chanock pointed out, was in Russia where Ivanovski reported the tobacco mosaic virus before 1900.

The biggest progress with viruses affecting humans was between 1931 and 1953, especially during World War II when at least three filterable viruses were discovered.

Man-to-man contact was reported by Drs. Robert J. Huebner and Wallace P. Rowe of the National Institute of Allergy and Infectious Diseases in 1953 when they described the adenoviruses. At that time they hoped to account for all the respiratory viruses except influenza, but many more were found to be implicated in the various respiratory diseases. Thirty adenoviruses alone have been discovered.

In addition there are the rhinoviruses which cause the well-known runny nose, especially rampant among military recruits thrown together from different parts of the country.

A board was set up two years ago that included representatives from Congress as well as from the U.S. Public Health Service and its National Institutes of Health, but problems preventing development of a vaccine still loom large.

"A number of these viruses are unstable," Dr. Chanock said. "They disintegrate and it is impossible to get preparations from them that would be of any value in a vaccine. Many tests are also needed to assure safety."

The virus that has priority in study is called RS, which refers to syncytial, respiratory virus. Delaying production of a vaccine for this virus, which causes frightening symptoms and often death in young infants, is the base or adjutant, which is mineral oil.

Many scientists believe there is a risk in injecting mineral oil, which remains many months or years in the body. Studies in animals have led to considerable doubt about such a vaccine.

The most promising vaccine may come from use of live viruses now being studied.

• Science News Letter, 86:195 Sept. 26, 1964

VIROLOGY

Thymus Gland Blamed For Causing Leukemia

➤ A TYPE OF LEUKEMIA, the fatal cancerous disease of the blood-forming organs, has been shown to originate in the thymus of mice instead of in the bone marrow as is commonly believed. This could offer a clue to eventual control of the disease in humans.

This research was done on lymphatic leukemia, which is marked by enlargement of the spleen and lymphatic glands as well as by an increased number of white blood cells, or lymphocytes.

Dr. Richard Siegler and Marvin A. Rich of Philadelphia's Albert Einstein Medical Center have been experimenting on newborn mice for the past two years. They used four types of leukemia virus, injecting one at a time. One virus type, isolated by Dr. Rich, bears his name. All four produced leukemia originating in the thymus gland.

The thymus, made up of a pair of ductless gland-like organs in the lower neck near the heart, is generally considered to be active in producing immunities in the body.

Examination of experimental mice showed that the first reaction to leukemia viruses was in one of the two thymuses, never in both.

Loss of white corpuscles caused the thymus to shrink, and its cells changed to a tumor-like appearance. The tumor cells spread to the opposite thymus and to such other places as the spleen, lymph nodes, bone marrow and circulating blood.

Only in the late stages of the disease, when tumor cells began to invade other organs than the thymus did the Einstein investigators find that the mice began to appear ill.

Types of mouse virus leukemia used in the investigations in addition to the Rich Virus Leukemia, included AKR, Friend and Rauscher.

The research, supported by grants from the National Institutes of Health, Bethesda, Md., and Einstein's department of radiology, is described in Cancer Research, Sept., 1964.

• Science News Letter, 86:195 Sept. 26, 1964

SURGERY

Success Reported in Stomach Cancer Surgery

➤ DEATH from the removal of part of a cancerous stomach occurs in less than one percent of such cases in Japan, a Japanese surgeon has reported.

Cancer of the stomach is one of the most common causes of cancer death in Japan, and any hope for cure lies in early detection and removal of perhaps more than half of the stomach.

"When a cancer is found that is limited to the inner layer of the stomach, the five-year-survival rate is 100%," said Dr. Komei Nakayama of Chiba University, Chiba, Japan.

Small cancers show no symptoms, so Dr. Nakayama examines patients routinely every six months. Any who have suspicious signs are then examined every two months. More than 30 cases of stomach cancer have been found in which the tumor was limited to the innermost layer of the stomach.

Dr. Nayakama spoke at a meeting of the North American Federation of the International College of Surgeons in Chicago.

• Science News Letter, 86:195 Sept. 26, 1964

National Institutes of Health

HEART-LUNG — Experimental heart-lung machine that may reduce the cost of open-heart surgery is held by Dr. Theodor Kolobow of the National Heart Institute's laboratory of technical development, who designed the unit with Dr. Robert Bowman, laboratory chief. A technician sits at console of a much larger, currently used heart-lung machine.