

M. D. Anderson Hospital and Tumor Institute

VIRUS PARTICLES—A particle present in the blood of the mother of a leukemic child (left) resembles a virus particle present in leukemic tissues or blood of a leukemic rat.

MEDICINE

Human Leukemia Virus

The discovery of leukemia virus particles in human blood and tissues has given doctors hope for a possible leukemia vaccine—By Faye Marley

➤ A VACCINE AGAINST human leukemia, cancer of the blood-forming organs, is seen as an ultimate hope with the discovery of leukemia virus particles in human tissues and blood.

The discovery was made possible by high-powered electron microscopes.

"This is a first step only," Dr. John B. Moloney of the National Cancer Institute, Bethesda, Md., told SCIENCE SERVICE. He emphasized that there is "no direct evidence" that the presence of leukemia virus particles in humans means that they are the cause of the fatal disease.

The similarity of the virus with that found in mice, however, is a hopeful sign since it has been definitely shown that leukemia virus causes the disease in animals.

Dr. Moloney isolated the widely used Moloney virus several years ago at the Cancer Institute, using mouse sarcoma. Unlike previously isolated mouse leukemia viruses, which cause the disease in various percentages of mice of a few susceptible strains, the Moloney virus causes leukemia in essentially 100% of all mice tested so far, regardless of their age at the time of inoculation.

Moloney virus also has induced leukemia in rats. The virus contains RNA, abbreviation for ribonucleic acid.

Even more enthusiastic than Dr. Moloney about the hopeful implications of the virus theory toward solving the human leukemia problem is Dr. Leon Dmochowski, chief of virology and electron microscopy at M. D. Anderson Hospital and Tumor Institute, Houston, Texas.

"What we see with the electron microscope," he said in a telephone interview, "is a picture of a virus that is no different in mouse and in man."

He agreed with Dr. Moloney that the exact connection with leukemia is not yet known. If the virus is not causing the disease, however, it certainly appears to be

related to it.

Genetic transmission of virus particles and possibly of leukemia was suggested by Dr. Dmochowski after a cooperative study with Dr. Paul Condit of the Oklahoma Medical Research Foundation of Oklahoma City. Findings of the study were based on examination of blood plasma from a family with a history of high incidence of cancer.

For five generations, as far back as can be documented, 80% of the family members have had some kind of cancer, with a prevalence of leukemia in the last two generations.

In the immediate family studied there are five sons. One of the boys, an identical twin, has leukemia. Examination of plasma from this leukemic twin and from the mother revealed particles resembling the virus particles found in mice. In the nonleukemic twin, the father and the remaining sons, no such particles were found.

Biopsies—surgical removal of tissue for diagnosis—at the Anderson Hospital have shown leukemia viruses in the majority of acute leukemia patients of all ages, Dr. Dmochowski said.

Once thought of as a disease of childhood only, leukemia takes the lives of more adults than of children. Acute leukemia is much more common in children under the age of 15 than in older persons. Chronic leukemia progresses more slowly than the acute type, which is characterized by rapid onset and progress.

Even if the virus theory is proved as the principal cause of leukemia, it is known that radiation in high dosages such as followed the atomic bombing of Hiroshima also can cause the disease, as can some chemicals.

Both Dr. Moloney and Dr. Dmochowski spoke at a symposium on leukemia at the University of Chicago Feb. 29.

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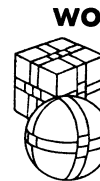
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