MEDICINE

Radioactive Chromium Works in Cancer Research

High purity radioactive chromium wire, implanted in patients, has been effective in treating solid malignant tumors in experimental tests

By Faye Marley

➤ IMPLANTED radioactive chromium wire is being used in human cancer research.

The Bureau of Mines of the U.S. Department of the Interior has been asked for a second wire shipment by University of Chicago researchers who have had initial success with patients at the Argonne Cancer Research Hospital of the University.

Although treatment is in the experimental stage, Dr. Melvin L. Griem of the University's radiology department told SCIENCE SERVICE that within the next seven months he and his collaborators hope to report several dozen treatments of solid tumors.

One woman patient treated six years ago had a life expectancy at that time of only six months but is leading a normal life today, Dr. Griem said.

The high purity wire, which is 31 thousandths of an inch thick, was originally made by the Bureau's Metallurgy Research Center at Albany, Oreg., for metallurgical rather than medical purposes.

At the University of Chicago, where the research has progressed furthest, the medical researchers use a special injection gun to implant short lengths of the wire, which they first make radioactive, into patients' cancerous tissue.

Other radioactive metals have been used as cancer-therapy implants, but chromium wire is unique because it may be implanted permanently, thus doing away with the need for surgical removal. Two reasons are given for this. First, chromium itself has no known chemical effect on the tissues. Second, radiochromium has a convenient half life—the time needed for the radiation level to drop by half—of 27 days. This is long enough to insure an effective radiation dose, but not so long that the metal would have to be removed to prevent an overdose.

The wire cannot be obtained commercially because the demand is so low that no one manufactures it. The Bureau's scientists, in first making the wire, reasoned that chromium, which is normally too brittle to be drawn into wire, would prove ductile enough if it could be made unusually pure.

Since any impurities in the metal would become radioactive themselves, and expose a cancer patient to undesirable types of radiation, high purity is doubly important.

Dr. Griem and his co-workers first cut the fine wire into pieces only three-sixteenths of an inch long. Then they irradiate the tiny pieces in an atomic pile to convert some of the chromium atoms into the isotope form, known as chromium 51. They implant each patient with a total of about 16 inches of wire.

The Bureau has agreed to send the Chicago researchers about 60 feet of the wire.

The method has not been tried for breast cancer, Dr. Griem said, for which the hospital uses hormonal management, but a variety of other solid tumors are being treated with the new method.

GE

Stereo Fluoricon

MEDICINE

Heart X-Rayed in 3-D

➤ PHYSICIANS can now see the inside of the human heart and other organs in three dimensions without using special binoculars or wearing stereo glasses.

General Electric's X-ray department has developed a new X-ray fluoroscopy technique that permits a specialist to perform heart catheterization in up to one-half the time now required and with reduced risk and discomfort to the patient.

The technique also can be used to substantially speed up such surgical procedures as pinning of bones, pin pointing the exact location of foreign objects, and examination of the gastrointestinal tract.

The low-cost fluoroscopy system developed by G.E., and known as a Stereo Fluoricon, provides images of the interior of organs in their natural three-dimensional relationships which can be directly viewed in a lighted room. It is the first commercially available stereo fluoroscopy system.

Several medical research centers and clinics in recent years have developed and built their own stereo fluoroscopic units, some of which require the user to wear special polarized glasses to see 3-D. The General Electric stereo system not only does away with this requirement, but is designed so that it can also be used as a conventional fluoroscope and so that existing Fluoricon installations can be quickly and easily converted to stereo operation.

The present major use for stereo fluoroscopy is in cardiovascular studies, where such equipment can not only speed heart catheterization, but also minimize the chances for possible tissue damage or dangerous side effects to the patient.