MEDICINE

Cobalt Treats Cancer

Victims of cancer of the cervix have been treated with radioactive cobalt. Results are expected to indicate an improvement over the use of radium.

➤ THIRTY-FIVE cancer patients, chiefly women with cancer of the cervix (neck of the womb), have during the past year been treated with cobalt made radioactive in the Atomic Energy Commission's pile at Oak Ridge, Tenn.

The results should be slightly better than those that would be expected if radium had been used, although it is too soon and too few patients have been treated so far to be sure of this.

The treatments are being given under the direction of Dr. J. L. Morton at Ohio State University School of Medicine at Columbus. Development of the radiocobalt for this purpose was done by Dr. William Myers, physicist and physician, who is a special fellow at the same university.

Reasons for expecting slightly better results with radiocobalt than with radium are: 1. The cancer-destroying gamma rays from cobalt made radioactive in the pile are more energetic than those from radium in the form used in cancer treatment. The radium may deliver anywhere from 400,000 to slightly over 2,000,000 volts of energy but the cobalt will always deliver over a million volts from the same unit of material. This means physicians can give a more controlled and homogeneous dosage.

2. Radiocobalt can be put in places where radium cannot be placed. This means, in cases of cancer of the cervix for example, that the cancer-destroying radiation can be brought not only to the primary cancer in the neck of the womb but also to the broad ligaments which help hold it in place and to the walls of the pelvis. These are not reached with radium as ordinarily used, but they are regions where metastasis, or the spread of cancer, often occurs.

One of the chief advantages of radiocobalt over radium is that the beta rays from radiocobalt have only one-tenth the maximum energy of the beta rays from radium disintegration products. These beta rays from radium are strong enough to damage or kill healthy tissue around the radium needles. That is why radium needles used in cancer treatment are enclosed in a thick layer of gold or platinum. The gold or platinum in a single needle costs from $10 to $25, without counting the cost of the radium. The radiocobalt can be sheathed in less costly stainless steel or the relatively cheap metal, aluminum. These, or even a moderately thick tubing of nylon, are not only cheaper and handier but actually remove all the beta rays from the radiocobalt, whereas the platinum (in one-half millimeter thickness) does not remove all the beta rays from the radium.

The radiocobalt can be recovered from the aluminum sheathing by dropping the whole thing into sodium hydroxide solution. This dissolves away the aluminum but does not dissolve the cobalt.

Because radiocobalt can be sheathed with materials like nylon and aluminum, and because it does not dissolve in body fluids such as blood, it can be used in ways radium cannot. The needles, for example, can be bent into different shapes and forms to fit the cancerous spot, or even can be wrapped right around the cancer. Doing this with radium needles would be dangerous because of the possibility of breakage. If a radium needle broke, radium salts escaping from it would be dissolved and carried by the blood to the bones, there to cause bone and life-destroying cancer. Needles of radon gas, if they broke, would be equally dangerous. But the radiocobalt needles, if they should break though none has so far, do not carry this danger because the cobalt is not soluble.

The radiocobalt can be handled with an electromagnet, giving it another advantage over radium needles.

A "porcupine applicator" has been designed by Dr. Morton for using the radiocobalt in treatment of cancer of the cervix. This consists of several layers made of a plastic such as lucite or plexiglas with holes bored at various angles. The radiocobalt needles are fitted into these holes and the applicators applied in tiers, one over the other. The needles automatically go into the right locations when the applicator is inserted and there is no danger of creating "hot spots" where ulcers might form from crossing over of radiation from the different needles.

Recently Dr. Myers has been preparing the needles of pure cobalt. The first ones were made of an alloy of 45% cobalt and 55% nickel. Their size is such that laid side to side it would take about 25 of them to measure one inch, and their length is about one-third of an inch. These are sent to Oak Ridge, put in the pile, and come back each with radioactivity equivalent to one or one and one-half milligrams of radium.

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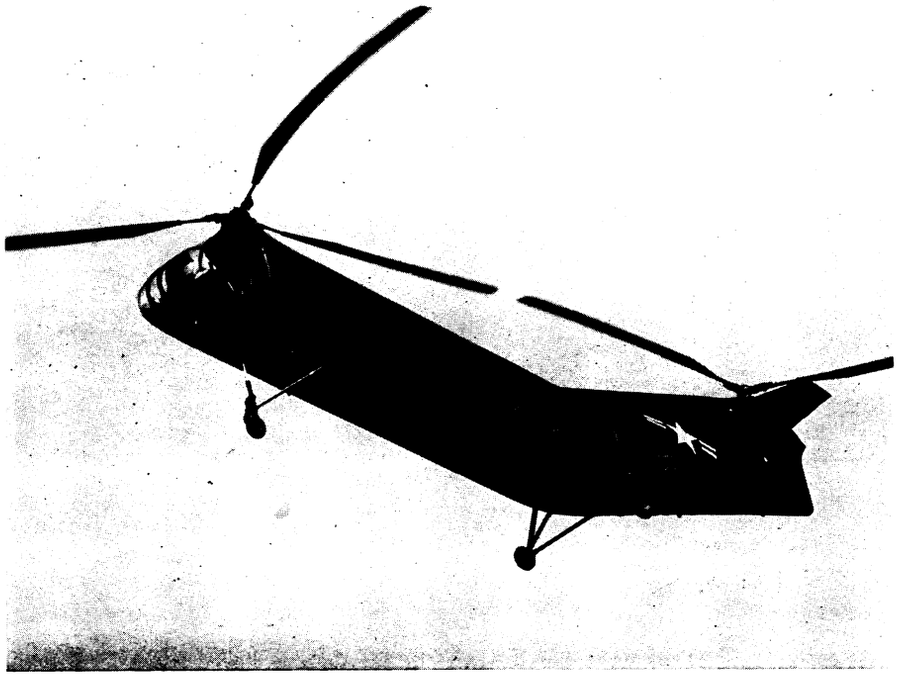

STREAMLINED "FLYING BANANA"—The Navy's new Piasecki HRP-2 is pictured during early flights at Morton, Pa. Its aluminum fuselage is the latest development in helicopters in the program to help America maintain leadership in transport type rotary wing aircraft. As many as 12 litter patients can be carried in the HRP-2. This type of aircraft is particularly suitable for mass rescues under the most adverse conditions and for troop-carrying assault tactics.