

medical sciences

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CANCER THERAPY

Damage to kidneys prevented

Radiation treatment for persons with advanced abdominal cancer is effective, but up to now a serious deterrent has been resulting kidney damage. Dr. Richard J. Steckel of the School of Medicine of the University of California at Los Angeles has attacked the problem with infusions of the hormone, epinephrine, into the left renal artery immediately before and during irradiation of the entire abdomen. Six months after completion of the treatment, the left kidney of his patient appears to be functioning better than the unprotected right kidney.

In preliminary work with dogs, Dr. Steckel and his team at the Center for Health Sciences in Los Angeles found striking evidence of radiation protection in four of five surviving animals. He advises further studies of the technique as a protection to the small bowel.

BRAIN TUMORS

Magnetic catheter

A small silastic rubber tube in which there are tiny magnets is making possible X-ray studies and treatment of brain tumors that could not be accomplished previously. The magnetically controlled catheter can be placed in some of the smallest branch arteries, Dr. Sadek K. Hilal of Columbia-Presbyterian Medical Center in New York City reports.

Two slits near the catheter's tip permit injection of medication and X-ray contrast material, and allow blood sampling. Invented and tested in the department of radiology of the center and the Riverside Research Institute, the device was first tried in a glass model of the vascular system with water circulating in it to simulate blood flow.

In humans, the magnetic catheter's course is controlled outside the body by a hand-held magnetic coil. Both direct and alternating current can be applied to the coil to give a constant magnetic force and an oscillating magnetic field that will make the catheter vibrate within the artery instead of sticking.

Dr. Hilal suggests that the device might be used for medication close to brain tumors, affecting only the selected artery and the area it serves.

RADIOACTIVE GOLD

Children survive tumor treatment

Injections of radioactive gold, which is readily available and inexpensive, offer promise in the treatment of children with tumors, at the base of the brain, that tend to seed and spread through the spinal and brain fluid.

A study of 10 patients, treated since 1964 at the University of Minnesota hospitals in Minneapolis, shows that four are presently alive without signs of tumor, and a fifth is alive and improved, although the tumor per-

sists. Dr. G. J. D'Angio, now of New York City, says there have been few undesirable side effects from the treatment, although two patients with leukemia apparently got no benefit.

Following external radiation, injections of the radiogold are given at six-week intervals. The two-step treatment permits high irradiation doses to many seeded tumors without exceeding brain or spinal cord tolerance.

Cells from tumors of the central nervous system tend to break off and spread to distant sites through the circulating fluid of the brain and cord. The radiogold is injected within the sheath of the spinal column into the fluids.

NEUTRON BEAM

Useful substitute for X-ray

A new and useful tool for medical diagnosis may be offered by a low energy neutron beam. Unlike X-rays this radiation source produces images that are relatively free of interference from bone structures.

The techniques will be especially useful where air must be visualized in the presence of bone and soft tissue, Dr. Paul B. Parks of the Atomic Energy Commission's Savannah River Laboratory says.

One of the problems to be solved before neutron images can be commonly used for medical diagnosis is that the maximum tissue penetration from low-energy neutrons is only about one inch. Fast neutrons, rather than slow ones, used in Dr. Park's experiments will be needed to penetrate most parts of the human body.

Small neutron generators are not available that can provide fast neutrons to produce medically useful images. Small amounts of the isotope californium 252 would produce sufficient neutrons by spontaneous fission. If this isotope can be made available at reasonable cost, neutron-produced images offer considerable promise.

ISOTOPES

New scanning substance

A new short-lived radioactive isotope called indium 113m has proved reliable for making scan images of the liver and spleen. Technetium is the isotope previously used, but Dr. E. James Potchen of the Washington University School of Medicine in St. Louis, who used indium 113m with 331 patients, says the new element appears to be as good.

By small changes in preparation techniques, indium 113m may prove useful in radiation scanning of a patient's lung, brain, bone, bone marrow and heart blood pool, the radiologist says.

Two of the advantages of the new isotope are that it can be prepared easily and its two-hour decay period minimizes radiation exposure, thus lessening damage to cells and tissue. Indium 113m is derived from a tin 113 generator, now commercially available.

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