MEDICINE

Cancer's Spread May Be Prevented By Discovery

Research at University of Pennsylvania Discloses That Disease Can Spread Through Valveless Veins

THE SPREAD of cancer from one part of the body to another, which frequently makes it impossible to save the patient's life even by removing the original cancer, may be prevented as a result of a discovery announced by Dr. Oscar V. Batson, of the University of Pennsylvania Graduate School of Medicine. (*Annals of Surgery,* July)

The discovery applies to the spread of germ diseases or infections. It is considered by medical authorities so important that the editors of the *Annals of Surgery* rushed Dr. Batson's technical report through the presses six months ahead of the usual schedule to make it available to the medical profession in the next (July) issue.

The new route by which cancer and germs can spread through the body is along the "vertebral veins," that is, the valveless veins about the vertebral column and their connections. The discovery was made by injecting opaque material used in X-ray diagnosis into the veins of cadavers and of living animals.

The injections showed that blood, and with it cancers and germs, can spread along the body through the vertebral veins, by-passing the heart and lungs. This is particularly likely to happen in coughing and straining.

As a result, doctors can no longer feel that as long as the lungs remain clear, the possibility of general spread of cancer or infection is remote. This idea was based on the long held view that the lungs are the filter for infections and tumors spreading in the body. According to this old view, cases of general spread without lung involvement were called "paradoxical," although the paradoxes might occur in as many as 50% of the cases.

"Routine examination of the lungs by X-ray is therefore not enough," Dr. Batson declares in view of his discovery of the new route of cancer and germ spread. "The entire spine and adjacent parts must be routinely and repeatedly surveyed. The importance of early diagnosis and treatment becomes much more important.

"Straining and heavy work may have to be avoided and prophylactic irradiation (by X-rays or radium) of large areas, particularly in pelvic, breast and lung tumors, may have to be introduced."

Dr. Batson explains his discovery as follows: "Ordinarily, tumors and infections are supposed to travel by lymph vessels and veins to the heart. Secondary tumors and infections may appear along this pathway. Before being spread to the rest of the body this contaminated blood stream must go through the lung capillaries (tiny blood vessels).

"But many times no secondary lesions (tumors or germ injuries) are found in the lungs, 50% to 70% in some instances.

"These secondary lesions are especially numerous in the spine and skull. There has been no adequate explanation for this 'paradoxical' spread.

"In an anatomic specimen, injection into the veins would be expected to, and generally does, follow the big veins to the heart and lungs. However, injection of breast veins and small pelvic veins results in the injection mass filling the valveless vertebral veins and their connections.

"In the living monkey the usual course of injected material is into big veins. But when the pressure produced by straining or coughing is imitated, the flow is along the vertebral veins."

Science News Letter, July 6, 1940

CAN RELEASE ATOM'S ENERGY

Drs. W. E. Stephens, W. E. Shoupp, R. O. Haxby, and W. H. Wells are shown here at work in their laboratory. These are the Westinghouse physicists who have just discovered that gamma rays can release atomic energy from uranium.

PHYSICS

New Way To Split Uranium And Release Energy Found

A NEW way to split the uranium atom with release of large amounts of energy within it was reported from the Westinghouse Research Laboratories.

Gamma rays, generated by proton bombardment of fluorite with the 95-ton electrostatic atom smasher, are found to split the uranium atom, releasing 30 to 100 times the energy expended in causing the fission.

Discovery in Germany early in 1939 that relatively slow and unenergetic neu-