

NEUROSURGERY

Fatal Brain Ill Remedied

A new jet gun fires a hog hair to produce clotting in sac in artery wall for the first safe treatment of aneurysm, a usually fatal disorder.

► A BRAIN DISORDER with 100% mortality rate is on the way to being conquered by a jet gun that fires a hog bristle.

The new technique was devised by a Washington neurosurgeon and uses a surgical weapon fashioned by the U.S. Naval Research Laboratory, Washington.

The brain aneurysm that is obliterated by the extraordinary operation consists of an outpouching of the wall of an artery in the form of a sac. It is analogous to the formation of a bubble at a weakened spot in the wall of the blood vessel. Aneurysms form from a defect in the arterial wall present from birth and usually go undetected until leakage arises from them.

Dr. John P. Gallagher, associate professor of neurosurgery at Georgetown University Hospital in Washington, who devised the operation and used the new hair jet gun, explained in an interview that after opening the cranium and exposing the sac, the hair is penetrated into the bubble in the artery in order to produce clotting within it.

In the past brain aneurysms have been surgically treated by using a tiny silver clip or clamp to block off the neck of the sac to prevent leakage into the brain that would bring swift death. But only too frequently the use of such a silver clip bursts the artery near the clip with fatal results.

In seeking another method of obliterating the bubble-like defect of the artery Dr. Gallagher hit upon the idea of placing something in its interior that would initiate clotting of the blood in the bubble. Mammalian hair was selected as the missile because it

has scales or shingles that cause an irritation resulting in clotting of the blood.

During preliminary experiments in the laboratory, stiff human hairs from Filipino, Chinese and Japanese subjects were tried first, and then eyebrow hair. These proved unsatisfactory. Horsehair and hog hair were tried and are the kind now used.

The gun to propel the hair into an aneurysm was specially devised by the Naval Research Laboratory under a research grant that paid Dr. Gallagher one dollar and gives the Government patent rights. The gun, itself barely larger than a pencil, was constructed by Harrison P. Hagemeyer, who was selected to do this special task by the Naval Research Laboratory.

Henry Birmingham and Capt. Bradley Bennett of the Naval Research Laboratory supervised the project, which had the approval of Dr. Joseph F. Saunders, head of the medical and dentistry branch of the Office of Naval Research.

The gun is operated by compressed air and the instrumentation within it is so precise that there is no recoil. Merely touching the bubble with the tip of the instrument permits the instrument to operate without shaking the sac and causing a fatal rupture.

Assignment to the Navy Department by Mr. Hagemeyer as the inventor of all patent rights on the gun itself will insure the availability of this instrument to neurosurgeons throughout the world.

The operation was first used on a patient in Providence Hospital, Washington, in June, 1962, with satisfactory obliteration of

the aneurysm, although the patient died later of causes not connected with the brain lesion. Autopsy revealed that the aneurysm was completely destroyed by the hair previously propelled into it.

The hair used is only ¼ inch long and 5/1,000 inch in diameter. Scientific details will be published in Naval Research Reviews for August, 1962, now in press.

The estimate is that there are at least 100,000 cases of aneurysms of the brain each year in the United States and the larger hospitals may have 50 or more cases in a year. Dr. Gallagher foresees that the same technique may prove successful in treating other conditions of the blood vessels such as varicose veins.

• Science News Letter, 82:35 July 21, 1962

SPACE

Most A-Test Fallout Deposited Within a Year

► STRONTIUM-90 from atom bomb tests filters back to earth from the upper atmosphere in much less time than previously estimated.

University of Arkansas scientists reported in Science, 137:15, 1962, that the deadly atomic by-product remains in the stratosphere about eight months before descending to earth.

Earlier calculations by Dr. Willard Libby, University of California Nobelist in chemistry, and experts from the U.S. Weather Bureau indicated that the average stratospheric storage time was from five to ten years. However, a study based on average bimonthly concentrations of strontium-90 in rain at Fayetteville, Ark., from November, 1958, through October, 1959, taking into account seasonal variations, gives evidence of a much shorter overall storage period.

The rate of strontium-90 fallout from the stratosphere in the spring is three to four times greater than the average annual rate.

The team of investigators are Drs. P. K. Kuroda, H. L. Hodges, L. M. Fry and H. E. Moore. Dr. Moore was on leave from Arkansas State College when the study was made.

Clams Are Indicators

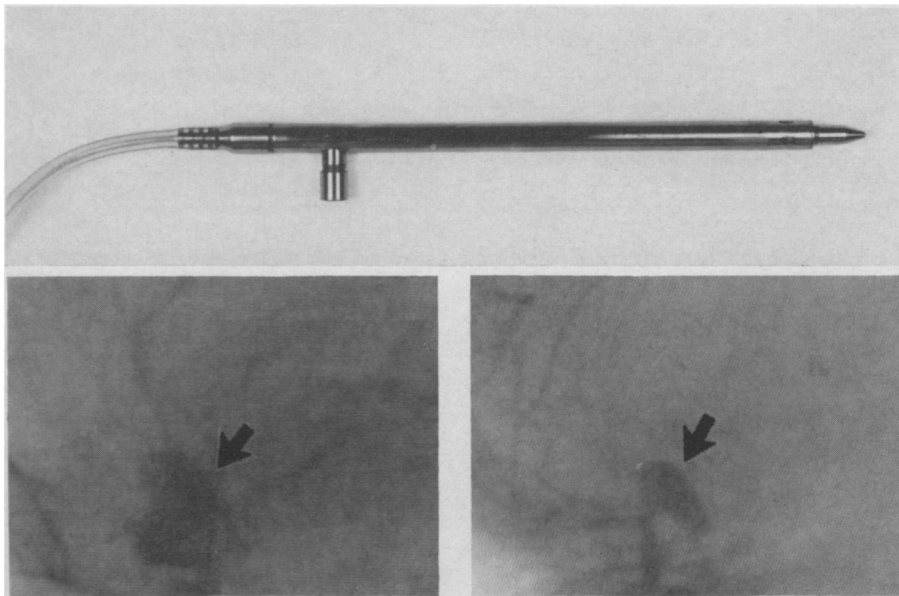
Another study on strontium-90 also reported in the journal Science, 137:39, 1962, suggests that the shells of fresh water clams may be used as indicators of the strontium-90 contamination of their environment.

By analyzing clam shell data, the concentration of radioactive contamination in the Tennessee River could be predicted 500 miles away from the Oak Ridge National Laboratory, the site of radioactive waste dumping.

The strontium-90 is absorbed by the clams and deposited in the shells. Because the shell is deposited in distinct annual layers, it also represents a historical "book" on strontium deposition.

Dr. D. J. Nelson of Oak Ridge National Laboratory, who made the study, suggests that such short-lived mollusks as physid snails may be useful for short-term indicators.

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BRAIN DISEASE TREATMENT—Above: The jet gun that shoots hog hair into brain artery defects. Below: Before and after treatment by Dr. John P. Gallagher as seen on X-ray photographs.