MEDICINE

Gas Clears Arteries

Short bursts of gas blown into the arteries of a patient suffering from atherosclerosis clear away fat which has accumulated in them, although it may return.

➤ SHORT BURSTS of gas blown into a diseased segment of artery are reported as a technique for "reaming out" clogged arteries.

SCIENCE SERVICE has previously reported surgery using synthetic grafts as a substitute for diseased blood vessel parts, but a team of surgeons at the State University of New York Downstate Medical Center has now used gas on 12 patients at the King's County Hospital, Brooklyn, with complete success.

The common type of "hardening of the arteries," called atherosclerosis, in which cholesterol or other fats accumulate to form aorta-femoral obstruction, may not be permanently helped by the "gas endarterectomy," because only time can tell whether or not fat accumulations will once again begin to appear within the walls of the repaired arteries.

Dr. Philip Sawyer, one of the researchers who reported the new technique at a meeting of the New York Surgical Society, pointed out that the gas operation makes use of the foreign graft unnecessary, at least in some cases. Some surgeons oppose graft operations in principle because they object to a "foreign body" being inserted anywhere in the human body.

Here are two examples of successful surgery by gas, which, incidentally, work best in cases where the disease is most advanced.

The first patient was a 65-year-old man whose artery trouble had become so severe that his left leg had been amputated above the knee. When he again sought help for pain, "coldness" and weakness in his right leg, which are typical signs of hardening of the arteries in the extremities, it seemed that a second amputation might be necessary.

The Downstate surgeons decided to try the gas technique, which had previously been tested extensively in animals and in human cadavers. The operation was a success, and two weeks after surgery, the man left the hospital with circulation restored to his one leg.

So far, the surgeons have tried the gas techniques on only one patient who suffered fatty obstruction in one of the two neck arteries. The carotid arteries carry blood to the brain, and if either of them cannot do its work, a stroke can occur. This operation, too, was a success. The patient, who was a 55-year-old bartender, returned to work about three weeks later.

With Dr. Sawyer, Drs. Sol Sobel and Martin Kaplitt reported the new technique at the New York Surgical Society meeting at the New York Academy of Medicine.

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PHYSIOLOGY

Hormones May Induce Sleep and Epilepsy

➤ WHEN GIVEN BY VEIN, some sex and adrenal hormones (steroids) induce sleep-like sedation or long-lasting epileptic activity of various types in cats and monkeys, Dr. Gunnar Heuser and associates at the University of California at Los Angeles Medical School discovered.

There is a finer line of distinction between sleep and epilepsy than is apparent at first sight, Dr. Heuser pointed out. One may have a seizure without a convulsion almost as if one were dozing off momentarily. And during the dreaming stages of sleep, individuals will twitch in a manner similar to a convulsion.

When very small amounts of progesterone, a female hormone, are introduced directly into certain areas in the forebrain, sedation and sleep are often induced. Dr. C. D. Clemente and his associates at UCLA have reported that electrical stimulation in this same area also induces sleep.

Whether steroid hormones do play a role in the physiopathology of sleep or epilepsy is at this time unknown, Dr. Heuser says. Doses used in his experiments were in excess of the physiological production rate of these hormones.

However, the brain of humans may be more sensitive to hormonal activity than that of experimental animals and thus might react to physiological amounts. Since steroid production shows daily and cyclical variation, it is conceivable that steroids may influence the onset of sleepiness or an epileptic seizure.

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SURGERY

TV Monitors Operations

➤ SUDDEN CHANGES in heart rate and breathing during a brain operation or other forms of neurosurgery can now be relayed immediately to physicians via TV screen in the operating room.

Developed by the Mayo Clinic in Rochester, Minn., with the help of the International Business Machines Corporation, the electronic monitoring system also can store information for later computer analysis. It will provide a data library that can be reviewed at convenient times, thus widening the scope of experience of residents in neurosurgery and anesthesiology.

Dr. John D. Michenfelder of the anesthesiology department, and Dr. Colin S. MacCarty, head of the department of neurosurgery at the Mayo Clinic, said that their patients at St. Mary's Hospital had been kept alive during critical neurosurgery procedures because more complete and accurate information was possible than previously.

The system is believed to be the first in the United States to be manned solely by medical personnel from within the operating room. By simplifying physiological measuring, it enables surgical teams to respond instantly to emergency situations.

During brain surgery, for example, a patient could have a sudden uncontrolled hemorrhage that requires lowering of the blood pressure. To do this, the anesthesiologist must make an accurate, rapid and continuing determination of the blood pressure.

Dr. Michenfelder reported this work for the first time before the 18th annual conference on engineering in medicine and biology in Philadelphia.

The system has been used during surgery on 250 neurosurgical patients at St. Mary's since last May. It operates on a continuous flow basis, and doctors simply take a brief look at the 14-inch screen to determine the status of vital indicators.

A second TV screen mounted outside the operating room permits interested medical personnel to observe events during an operation. Plans are under way to hook the system to a second neurosurgery operating room at the hospital by the end of this year, Dr. Michenfelder said.

This surgical monitoring system is one of several joint studies being conducted by IBM with medical institutions around the United States.

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IBM

AID IN SURGERY — The video screen mounted on the operating room wall at St. Mary's Hospital in Rochester, Minn., is part of an electronic surgical monitoring system. It displays a continuous flow of information on a patient's physiological condition during neurosurgery.