

ANATOMY

Find Vital Brain Centers

Discovery of the location of the centers controlling breathing and blood circulation may save the lives of patients stricken with bulbar polio.

► DISCOVERY of the two most vital centers of the brain controlling breathing and blood circulation was announced by Dr. A. B. Baker, University of Minnesota Medical School, at the First International Poliomyelitis Conference in New York.

They are bits of tissue each no bigger than a grape seed. They are located in the part of the brain called the medulla, or bulb, which connects the spinal cord with the brain. The bulb itself is only the size of a man's thumbnail, extending an inch and a half back into the brain.

The breathing and blood circulation centers are each really twins. That is, there is a left and a right breathing center and a left and a right circulation center. The twins of each set work together. Having two of each is a natural safety provision, like having two lungs and two kidneys. A person might get along with only one of the breathing center twins, but if both are destroyed by the polio virus or an injury, death follows.

Discovery of the exact location of these breathing and circulation centers was made during the infantile paralysis epidemic in Minnesota in 1946. Doctors had known before that injury to the bulb at the base of the brain might kill by stopping either the heart or breathing.

They knew this was the cause of death in polio when the virus invaded the bulb of the brain, in cases of bulbar polio. But when doctors at the University of Minnesota hospital saw 183 bulbar polio patients within three months, they were able for the first time to sort out the patients by symptoms.

Some, they saw, had trouble only with breathing. They had this trouble even though their breathing muscles in the chest were not paralyzed. Others had fast heart beat, and the blood pressure went way too high or way too low. Still others had trouble swallowing and talking. Obviously, different centers in the brain had been affected.

Actual location of the centers was made by examining 5,000 thinner-than-paper slices of the bulbs of brains of patients who died of bulbar polio. In every case of death from breathing trouble, the damage was in the same tiny area in the bulb. In every case of death from heart and circulation trouble, the damage was in another tiny area, but the same area in each of these circulation cases, too.

Polio patients stricken with bulbar polio this year, as many have been already in North Carolina, will have a better chance of survival, thanks to these discoveries. No

more than ten out of every hundred bulbar patients should die, Dr. Baker estimates. Most of these would be the ones whose blood circulation centers have been damaged by the virus. The ones with damage

CHEMISTRY

Halt Spread of Infection

► DISCOVERY of a blood chemical barometer of polio infection was announced by Drs. David Glick and Frank Gollan of the University of Minnesota Medical School at the First International Poliomyelitis Conference in New York.

The chemical is called anti-hyaluronidase. It acts to stop hyaluronidase, which is a spreading agent contained in bacteria, viruses, snake venom and bee sting venom. The spreading chemical, hyaluronidase, speeds the spread of infection through the

to the breathing centers can be kept alive in most cases by oxygen and other treatment during the acute stage.

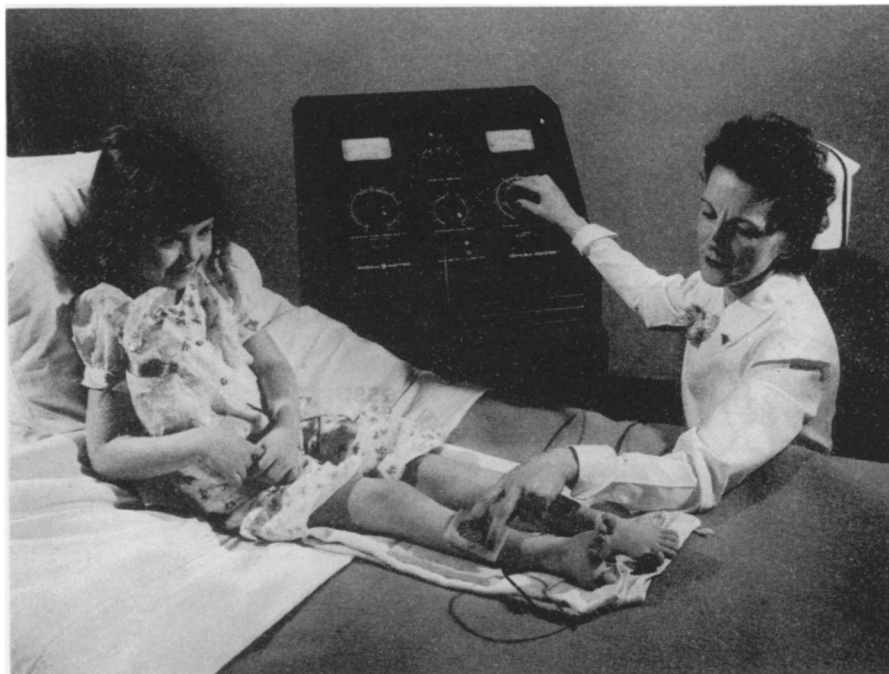
For the patients with damage to the circulation centers no treatment has yet been discovered. The next step by Dr. Baker and associates will be to attempt to produce exactly the same damage to exactly the same tiny spot in the brains of laboratory animals. Then they can try various treatments to find one that will save the victims. When this is accomplished it will be another step in the fight against infantile paralysis.

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body by dissolving the cement-like chemical that holds tissue cells together. In studies of animals and 27 human polio patients, the Minnesota scientists found the amount of the anti-spreading chemical increased in direct proportion to the infection.

The anti-spreading chemical, the scientists believe, might be used to determine the acuteness of infection in a polio case and to confirm the diagnosis in suspected cases.

They are trying now to isolate the anti-hyaluronidase so that it might be given to



MUSCLE-STIMULATING DEVICE—Paralyzed muscles of a little girl are artificially exercised by this new device called a variable frequency wave generator. Developed jointly by the General Electric Research Laboratory and the G-E X-Ray Corp., the machine uses electric current to contract and relax paralyzed muscles to prevent them from wasting away through disuse. It was demonstrated for the first time at the First International Polio Conference in New York.