

MEDICINE

Seek Cancer Seed Killers

National Cancer Institute scientists search for chemical, to be used at time of surgery, to kill microscopic cancer cells that sometimes remain in wound after operation.

► A CHEMICAL to kill cancer cells that may be left behind in the wound after the surgeon has cut out the cancer is being sought by scientists at the National Cancer Institute, Bethesda, Md.

This "seeding" of the wound with a few tiny cancer cells has for some time been seen as a cause of cancer recurrence either at the original site or elsewhere in the body.

Cancer cells left behind might either grow where they are or travel along lymph channels to other parts of the body.

The best way to stop this would be to put a cancer-destroying chemical into the wound at the time the cancer is removed, the scientists point out. This, of course, depends on discovery of an effective chemical for the job.

Fortunately, not all cancer cells left behind in a wound will grow. Fortunately, too, surgeons very often are able to get all the cancer out.

Fresh proof that tiny fragments of the cancer, too small to be seen without a microscope, may break off and remain in the wound comes from a study by Drs. Robert R. Smith and Albert W. Hilberg of the National Cancer Institute.

These scientists washed out the wounds of 36 cancer patients after the cancers had been removed and just before the skin flaps were sewed back in place.

The washing was done by a fine spray of a sterile salt solution too weak to be

irritating. The washings were spun in a centrifuge and the sediment collected was examined under the microscope after it had been properly stained.

In 10 of 36 cases, washings contained cancer cells. In another five, cancer cells were suspected. In 21, there was no evidence of remaining cancer cells. It is only 21 months since the study was started, but five of the 36 patients have already developed recurrent cancer where the original one was removed. Two of these were in cases in which the wound washings showed cancer cells. One was one of the suspicious washings. The other two were ones in which the washings did not show definite evidence of cancer.

In their report in the *Journal of the National Cancer Institute* (Dec., 1955), the scientists state:

"Studies are under way to develop means of destroying the tumor tissue which may be present in an operative wound. Effective local chemotherapy of cancer can best be accomplished at the time of the primary surgical removal of the cancerous tissue.

"If and when an effective chemotherapeutic agent is discovered which can selectively destroy cancer cells that either become embedded in the wound or break off and are free in the intact blood of lymph channels, effective therapy of cancer will be available."

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PSYCHOLOGY

No Learning During Sleep

► LEARNING during sleep is impractical and probably impossible, Drs. Charles W. Simon and William H. Emmons conclude from a study made at the Rand Corporation, Santa Monica, Calif.

The reason this has not been conclusively demonstrated previously, they explain, is because insufficient precautions were taken in earlier experiments to be sure learners were actually asleep and not in the twilight zone between sleeping and waking.

Whether this drowsy state can be utilized for training is still open to speculation.

Even if you could learn while drowsy, you should weigh the advantage of what limited learning you might accomplish against the disadvantage of having your sleep disturbed, they state.

The Rand scientists made sure their subjects were asleep by tapping the electric impulses direct from their brains.

The Rand Corporation is an organization doing research for the Air Force.

The ten junior college students, nine scientists and two policemen used as subjects all were found to have a persistent brain wave pattern when they were awake but relaxed with eyes closed. This pattern is known to scientists as "alpha rhythm."

Training was given by playing questions and their answers on a tape recorder to the sleepers at the rate of one question-answer combination every five minutes.

Sleep consists of eight different levels, from the relaxed-but-awake level to very deep sleep, the scientists learned by watching the brain wave patterns. Most investigators believe an individual is asleep when he reaches the sixth level, although some would say that a person is asleep toward the lower part of the fifth level.

The fifth level, the Rand investigators

call a "dreamlike state." In it the alpha rhythm tends to disappear, although the question-answer is followed by brain waves, some of which are within the alpha range. At this level the sleeper is easily awakened. The sixth level is "light sleep," during which a new pattern of brain waves appears, which the investigators call "sleep spindles."

In the morning when they woke up, the sleepers were given the questions and asked to write the answers.

The questions given after the subjects were asleep, as indicated by disappearance of the alpha rhythm brain waves, were practically all missed, showing that learning did not take place during deep sleep.

"Perhaps the future development of new and unknown techniques will permit someone to learn complex material while he sleeps," the scientists state in the *Journal of Experimental Psychology* (Feb.). But for the present, sleep-learning is not the simple matter that some experimenters and commercial firms, which sell equipment for this purpose, would lead us to believe."

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MEDICINE

Young Personalities and High Blood Pressure

► PERSONS with high blood pressure generally have a low emotional boiling point, and are less flexible and less assertive than individuals without the disease, experiments indicate.

A team of scientists found that personalities of a group of women with high blood pressure were similar to personalities of younger persons, including a group of military officers, who were at the top of the normal blood pressure range.

A high percentage of the latter, called pre-hypertensives, eventually develop the disease.

The scientists, Drs. Betty L. Kalis, Robert E. Harris, Lewis G. Carpenter and Maurice Sokolow of the University of California Medical Center, San Francisco, conclude that personality has much to do with development of high blood pressure, or hypertension. They hinted that some day they hope to be able to spot people who are likely to get the disease long before it develops.

The scientists subjected 14 hypertensive and 22 non-hypertensive women to emotional stress in two psychodramas. Proof that these psychological "plays" produced stress were an average rise in blood pressure of 15 points in hypertensives and nine points in normals.

Psychologists and psychiatrists scored the reactions of the women, without knowing who had the disease.

Consistently the hypertensive women were more extreme in their reactions. They blew up or they gave up meekly in situations in which most of the normal women persistently, firmly and tactfully pursued objectives. The hypertensives' blood pressure and heart rate also rose higher.

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