MEDICINE

Clues to Leukemia

Spot symptoms that show patients may be in pre-leukemia stage. Limited treatment may have kept some victims alive over two years.

➤ CLUES TO detecting acute leukemia before it develops, when treatment for this malignant disease might be most helpful, have been discovered by Drs. Matthew Block and Leon O. Jacobson of the University of Chicago.

As a result, limited treatment they were able to give patients in a pre-leukemia state may have kept some of them alive up to 30 months.

All patients not treated in the pre-leukemia stage died from a few days to three weeks after the leukemia set in. It was from study of these 12 patients, all adults, that the scientists got a picture of the actual development of leukemia and the clues to detecting the pre-leukemic state.

The clues consist of the following observations: Most of the patients had a variety of allergies ranging from hay fever to drug rashes and swellings. The allergic symptoms were usually not very serious but kept repeating. The patients had anemias not helped by blood transfusions. In some patients increasing numbers of white blood cells appeared before the leukemia; in others, as the leukemia became apparent. Bone marrow gradually became crammed solid with white cells. Leukemic changes in liver and spleen usually took place after the leukemia became obvious.

The ten women and two men were under observation for three to 30 months during what the scientists considered was a pre-leukemia state. Until the disease finally developed, the scientists could not be sure whether it would or not.

The symptoms of these 12 patients were much the same as those seen in mice in which leukemia developed spontaneously or was induced by X-rays or chemicals. Up to a certain stage of development, acute leukemia can be halted or prevented in a large percentage of mice by cortisone or ACTH.

In normal persons responding to toxic agents, the blood-forming organs shrivel and then sometimes temporarily over-renew themselves. Normal cell action checks this renewal, or regeneration, and restores normal balance.

In pre-leukemia the blood and organ response is similar but when the disease progresses into acute leukemia, the regeneration gets out of control. It is only in this state of excessive over-regeneration that leukemia can be accurately diagnosed, the Chicago scientists found. Up to that point the pre-leukemia response is a normal type of response.

The research was announced by the American Cancer Society which supports it.

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MEDICINE

Arthritis From Hormone

➤ NEW EVIDENCE that the growth hormone of the pituitary gland in the head may be the cause of arthritis has been discovered by Drs. C. H. Li and William O. Reinhardt of the University of California.

Their study started out as an investigation of cancer, supported by the American Cancer Society and the Lasker Foundation. When the rats they were using developed arthritis, the cancer study was sidetracked.

The scientists found that pure growth hormone would produce arthritic conditions occasionally in normal rats and in all rats with adrenal glands and ovaries removed. The joint swellings, tenderness and other arthritic symptoms were relieved when hydrocortisone was given.

The experiments, reported in *Science* (March 20), give preliminary experimental confirmation of a theory suggested by a number of scientists, including Canadian Dr. Hans Selye. According to this theory, the pituitary keeps on producing growth hormone at a significant rate even after the body has grown to maturity and no longer needs the hormone for growth.

In most cases this is not damaging in early adulthood, the scientists say, because the cortisone produced by the adrenal glands combats the action of growth hormone. But as people grow older, the adrenals produce less cortisone.

Then the growth hormone has no place to go. It cannot go into normal body growth because normal growth is completed. And there is not enough cortisone to combat it. So the growth hormone starts making the joints grow—hence arthritis.

Then when cortisone is injected into the arthritis sufferer, the action of the growth hormone is once again checked and the patient gets better.

Drs. Li and Reinhardt do not contend that their evidence gets this theory out of the woods yet. But on the basis of the new experiments, and earlier ones in many laboratories, it looks pretty good.

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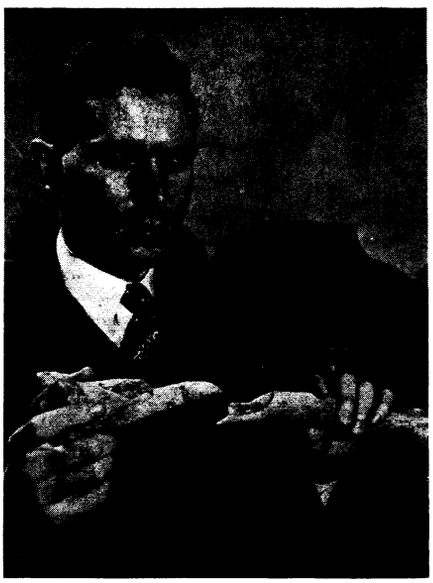

EVIDENCE OF CANNIBALISM—The Aztalan bone section (left) held by George Holcomb of the University of Wisconsin has marks made by diners hacking at it to get at the marrow.

PHYSICS

Supersonic Sled Tests Air Force Parachutes

➤ A SUPERSONIC sled zipping along gleaming steel rails at 1,500 miles an hour now is being used at Edwards Air Force Base, California, to test the design of new parachutes that some day may save the lives of fast-flying jet pilots.

From a standing start, the rocket-powered sled can reach its peak speed in only 4.5 seconds, but in that time it travels 5,500 feet—more than a mile. At its top speed, the sled is traveling about twice the speed of sound, measured at sea level.

The sled, created by the Cook Research Laboratories for the Air Force, is powered by a North American Aviation rocket engine. Currently the sled is being used to test parachutes and other equipment associated with jet planes. Experts figure if the equipment works satisfactorily on the sled, it should work on jet planes that travel about half as fast as the sled.

The sled is powered for only eight seconds before its $100 oxygen-alcohol liquid fuel supply gives out. It scoots along 10,000 feet of track similar in type and size to standard railroad rails, but smoother. A scoop dips into a trough of water lying between the rails to stop the sled in about 300 feet.

With adaptations, the sled can be used to reveal the effects of high speeds and fast stops on human beings. Its propulsion system can be used to assist airplane take-offs from runways or carriers.

Science News Letter, April 4, 1953