MEDICINE

Marrow Injections Help

➤ BONE-MARROW injections for radiation victims appear likely to have value as a future treatment, Dr. Gould A. Andrews of the medical division, Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tenn., has reported.

He based his opinion on the survival of four Yugoslavian atomic scientists more than three years after exposure to a high radiation dose.

Dr. Andrews compared these cases with a group of workers injured at Oak Ridge about the same time, who survived an accident in which the radiation dosage was slightly smaller.

"If we had an accident at Oak Ridge with great radiation hazard, we would be prepared to try a fresh transplant of bone marrow with matching blood types from adult volunteer donors," Dr. Andrews told SCIENCE SERVICE in a telephone interview.

Dr. Andrews said plans had been made to set up bone-marrow storage facilities for use in treating leukemia (cancer of the blood).

"We do not expect other radiation accidents," he added. "There are many other places where the danger of radiation accident is greater than at Oak Ridge," he pointed out. "Even in the accident in 1958, which involved five workmen, the radiation dosage was 236 to 365 radiation units, which is below the lethal level."

The Yugoslavians underwent higher exposure, Dr. Andrews explained, although the latest report from an international team that reviewed the accident said the dose was considerably lower than had been thought at first. The highest dosage received by one of the men was 436 units, and he died, even after bone-marrow injections.

The Yugoslavian accident, which occurred on Oct. 15, 1958, at Vinca, near Belgrade, when an experimental nuclear reactor went wild, has been the subject of wide controversy.

"I am inclined to believe that the injections may have shortened the period of marrow depletion," Dr. Andrews said, "but there are those who do not agree with me."

Only simple supportive treatment was given to the Oak Ridge workmen—antibiotics and blood transfusions, vitamins and special diet.

The Yugoslavians (four men and a woman) were flown to Paris within 24 hours after the accident, where they were treated at the Curie Hospital by a team headed by Dr. Henri Jammet of the French Atomic Energy Commission.

The bone-marrow graft was given relatively late, Dr. Andrews said, approximately a month after the radiation victims were hospitalized, and because of the lateness of the injection, the graft did not produce a very striking alteration in the blood pattern. But he believes it may have helped.

The Journal of the American Medical Association, 179:191, 1962, in which Dr. Andrews' findings appear, carries an editorial praising the Paris bone-grafting as a "historic new form of therapy."

A number of hospitals have set up bone-grafting storage facilities for use in treating cancer patients, but the treatment given the Yugoslavian accident victims is the first of its kind.

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PUBLIC HEALTH

Carbon Monoxide Effects

➤ CARBON MONOXIDE POISONING causes significant changes in the human heart that show up in electrocardiograms, a University of Southern California School of Medicine professor reported at a symposium of the Los Angeles County Heart Association.

The abnormal electrocardiograms are somewhat like those taken in persons with coronary artery disease, but the lack of oxygen in carbon monoxide cases is spread uniformly through the entire heart muscle, according to Dr. Richard S. Cosby of Pasadena.

Electrocardiograms of drivers on Los Angeles streets and freeways who are exposed to large doses of exhaust fumes might be interesting and revealing, Dr. Cosby said.

Carbon monoxide prevents oxygen from getting to the heart muscles through a chemical reaction with hemoglobin, he explained, whereas in other forms of heart disease the large arteries themselves are blocked and thus stop the blood from carrying oxygen to the heart.

Patients can recover from lower levels of carbon monoxide poisoning in a few weeks and their electrocardiograms will return to normal, Dr. Cosby said, although small areas of their heart muscle appear to die temporarily.

In coronary artery disease with blocking of large arteries, no similar return to normal takes place.

More than two parts of carbon monoxide in one thousand parts of air is a dangerous level, the USC associate professor of medicine said, explaining that it takes only six minutes in a closed garage with an automobile engine running for carbon monoxide to start poisoning the body. In the open air, the same process might take six hours.

A 20% concentration of carbon monoxide in the air will give a person a headache, Dr. Cosby reported. At 30%, nausea and vomiting will occur. At 40%, the heart beats faster and irregularly and the person breathes more rapidly. A concentration of between 60% and 70% will cause coma and convulsions that could result in death.

Carbon monoxide causes a curious chemical change in the body, the USC doctor said. The hemoglobin or oxygen-carrying red pigment of the red blood corpuscles takes hold of the odorless, colorless carbon monoxide molecules which are inhaled and won't let go of them, and all the blood becomes a brighter red in the process.

In fact, hemoglobin has a 100 times stronger attraction for carbon monoxide than for oxygen. That is why it is almost useless to give oxygen to a person suffering from carbon monoxide poisoning, he said.

Joining Dr. Cosby in his research were Dr. Michel Bergeron and Mary Mayo. They studied 123 cases from the records of the Los Angeles County General Hospital and the Huntington Memorial Hospital of Pasadena.

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OPHTHALMOLOGY

New Device Eliminates Eye Infection Danger

➤ A NEW DEVICE that shields the eye from direct contact with the tonometer, an instrument used in testing for glaucoma, can now reduce the dangers of infection from eye fluids.

A disposable latex-rubber sheath has just been developed under the sponsorship of the U.S. Public Health Service by Dr. Ronald Wood of the Wilmer Eye Institute, Johns Hopkins Hospital, Baltimore.

The sheath, called a tonofilm, is three-fourths of an inch long and scarcely larger in girth than an ordinary lead pencil. It can easily be placed on the tonometer from its sterile plastic container and then discarded after being used.

Dr. Wood got the idea for the latex-rubber sheath when his investigations showed that all of the current methods for sterilizing the glaucoma testing instrument were ineffective in eliminating the eye fluids drawn into the barrel of the tonometer by capillary attraction.

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AGRICULTURE

Indicator Developed For Grain Elevators

➤ A SIMPLE INEXPENSIVE device that indicates when a grain bin is almost full has been developed by U. S. Department of Agriculture scientists.

The portable indicator, developed by the Agriculture Marketing Service, has a pressure switch that sounds a warning horn when the grain reaches a certain level. It is placed just below the rim of the bin. The mechanism, which can be easily installed or removed in one minute, has proved completely satisfactory.

Efficient modern equipment can pour up to 100 bushels of grain per minute into the bins with overfilling sometimes occurring quickly to clog operations. To prevent such accidents and the massive labor of shoveling and cleaning up, an elevator employee has kept constant watch on the operation.

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