

MEDICINE

Transplantation Immunity

Animals have survived organ transplants from unrelated donors after treatment with 6-methyl mercaptopurine, a drug that overcomes the usual immunity, Faye Marley reports.

► SURVIVAL of animals longer than 300 days following organ transplants from unrelated donors was reported in Atlantic City. Drug injection was credited with overcoming the usual immunity.

A dog was still alive after 321 days and had continued to accept a kidney transplant even after withdrawal of the drug, 6-methyl mercaptopurine. Two other dogs were alive longer than 300 days after similar transplants and treatment with two drugs, imuran and actinomycin C. Other drugs reported partially successful included methotrexate, trypan blue and azaserine.

Tolerance for an organ homograft between unrelated animals can be achieved only if the immunology is reduced or suppressed.

Drs. Charles F. Zukoski and James M. Callaway of Vanderbilt University School of Medicine, Nashville, Tenn., told the 48th annual clinical congress of the American College of Surgeons that the antimetabolite drugs have previously been used to extend kidney homograft survival for prolonged periods but that rejection of the homograft had been the immediate result when the drugs were withdrawn.



Hughes Aircraft

HIGH-POWER AMPLIFIER TUBE
—A Hughes Aircraft Company technician assembles a "stack" of individual circuit parts that forms the millimeter wave structure that interacts with an electron beam to produce the high power of the amplifier tube developed by Hughes. The tube can provide many hundreds of times the message-carrying capacity of conventional radio.

In their use of 6-methyl mercaptopurine, the investigators found that sensitized cells disappeared, making further use of the drug unnecessary at the end of 198 days.

Antimetabolites are substances antagonistic to other substances needed for normal cellular metabolism and they inhibit growth.

Drs. Guy P. J. Alexandre and Joseph E. Murray of Harvard Medical School, Boston, reported success with combined imuran therapy in similar animal experiments.

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Organ Transplant Seen

► HOPE FOR SUCCESS in transplanting organs was seen in a preliminary report on the effect of direct electric current on the healing of wounds.

It is the invasion of the lymphocytes, a white blood corpuscle, that prevents acceptance of homografts. In experiments with adult rabbits, Drs. L. C. Carey and Derward Lepley Jr. of Marquette University, Milwaukee, found that direct electric current keeps lymphocytes out of the wounds.

After anesthetizing the rabbits which had first been given the drug chlorpromazine, the researchers made incisions and placed 24-gauge stainless-steel wire into the wounds as electrodes. In the negative pole wounds, there were amazingly few inflammatory cells of any kind.

Speaking at the 48th Annual Clinical Congress of the American College of Surgeons at Atlantic City, the investigators described research in which they had used small direct currents to bring about and to prevent thrombosis, blood clotting. In these studies, the negative pole of a direct circuit was shown to stop formation of blood clots while electropositivity induced clotting. The basis for these effects is believed to be the attraction or repulsion of negatively charged cells and platelets in the blood.

Another hopeful report made today pointed to the cure of humans made ill by radiation. Dr. Chester B. Rosoff of Harvard Medical School told of success in treating radiated animals with non-absorbable antibiotics, neomycin and polymyxin. It is necessary to treat animals within an hour after radiation or before radiation occurs.

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Quick Kidney Transplant

► QUICK TRANSPLANTS of "cadaver" kidneys from young healthy persons can be successful if the immunity problem is overcome, a panel of surgeons told the 48th annual Clinical Congress of the American College of Surgeons at Atlantic City.

So far, the use of radiation and drugs

is the only means of assuring a "take" except in twins. Most of the successful cases were identical twins. There is no advantage in being related to a kidney donor unless he is a twin. In fact, related donors have less success than nonrelated donors.

There have been 95 human kidney transplants throughout the world, 30 of them between twins. Twenty-six of the twins are living and well, but none of the non-twin recipients lived over six months after the kidney was grafted into his body.

Thirteen cadaver kidneys, 12 from non-related donors, have been transplanted, some of which functioned for a time. Of 12 cases of mother, father, sister, brother or cousin donors, the recipient rejected the kidney rapidly.

Less than one-half of the 65 nonrelated cases had a kidney that functioned, but patients died of radiation or drug treatment accompanying the graft. Dr. Joseph E. Murray of Peter Bent Brigham Hospital and Harvard Medical School, Boston, reported that he had done more than 50 human kidney transplants, one of which was the famous case of nonidentical twins still living since 1959.

Eighteen of 19 of his identical twin grafts have been successful, with 16 patients still living and normal. At least one patient became a mother of several children after her kidney graft.

Others reporting human kidney transplants were Dr. David M. Hume, chairman of the panel, and Dr. Richard H. Egdahl, both of the Medical College of Virginia, Richmond; Dr. Jack A. Cannon, University of California at Los Angeles, and Dr. Richard L. Varco of the University of Minnesota, Minneapolis.

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Suspended Animation

► SUSPENDED animation in animals—complete stoppage of circulation and breathing—for as long as one hour was reported at the 48th Clinical Congress of the American College of Surgeons at Atlantic City.

Eighty-five dogs were anesthetized and observed in a refrigerated pressure chamber without damage to the heart or brain. They were cooled to about 86 degrees Fahrenheit.

The advantage of this experiment to humans may be in the eventual treatment of carbon monoxide or barbiturate poisoning, heart stoppage and impaired blood supply. Body consumption of oxygen is reduced while increasing the physically dissolved oxygen in the watery parts of the blood and tissues 20 times.

Drs. Douglas Pinto and Victor Richards of the Presbyterian Medical Center, San Francisco, reported the experiment which they have not yet tried on humans.

Another test of suspended animation in rats was reported to show the effect of deep-cooling on learned behavior.

Drs. Stanley W. Jacob and Charles K. Chapman of the University of Oregon Medical School, Portland, told the Congress that suspended animation may enhance the ability of the animal to use recently learned information.

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