medical sciences

INFLUENZA

Amantadine called good protector

A drug named amantadine hydrochloride, sold by DuPont under the trade name Symmetrel, has stirred considerable controversy among scientists arguing over its ability to protect individuals from the Hong Kong flu (SN: 11/2/68, p. 444). Although it was approved in the United States for use against type A2 viruses, Public Health Service doctors declared last year that there was no specific data to support its use against the Hong Kong virus, itself a member of the A2 family.

Russian investigators, however, maintained that amantadine was, in fact, effective. To prove their point, a team headed by Dr. A. A. Smorodintsev at the All-Union Research Institute of Influenza in Leningrad conducted clinical trials on 404 volunteer medical students. Reporting in the Aug. 31 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Dr. Smorodintsev and his colleagues write that amantadine was 51 percent effective in preventing artificially induced A2 influenza of all types in individuals treated with the drug before being exposed to live viruses. Of those who did contract an infection, they say, individuals pretreated suffered only mild forms of the disease in 73 to 92 percent of test cases. At the same time, they found that administering amantadine after infection had taken hold had no beneficial effects.

IMMUNOLOGY

Blood platelets clue to rejection

A change in the normal population of blood platelets in the body is a warning that signs of tissue rejection may soon appear in transplant patients, according to a Chicago scientist who studied kidney recipients. Dr. Max E. Rafelson of Rush-Presbyterian St. Luke's Medical Center observes that platelet changes appear about 10 days before clinical symptoms of rejection.

Speaking to investigators at the Blood Transfusion Center in Toulouse, France, Dr. Rafelson explained that centrifuged human platelets separate into four density groups labeled simply A, B, C, D. Generally, band C cells constitute about 50 percent of platelets in a sample from a healthy person, band D about 20 percent. Marked changes in these ratios have been correlated with subsequent episodes of tissue rejection.

KIDNEY TRANSPLANTS

In defense of cadaver grafts

The chances that a kidney transplant between siblings will be successful are extremely high. Indeed, current records show that the two-year survival rate is 81 percent. While this is encouraging for those patients fortunate enough to have a brother or close relative who can donate a healthy kidney, it has little applicability to the majority of potential kidney recipients. Thus, if kidney transplant surgery is to increase, doctors must look to deceased persons as a source of transplantable organs, even though it is generally presumed that recipients of cadaver organs fare less well.

Now a team of scientists from the University of Wisconsin Medical School in Madison reports a series of cases in which patients with cadaver transplants fared as well, and in some instances better, than those with kidneys from genetically compatible relatives. In the Aug. 31 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Drs. Weldon Shelp, Fritz Bach, William Kisken, Margaret Newton, Richard Rieselbach and Arvin Weinstein describe four patients matched to their cadaver donors solely on the basis of ABO blood groups. In all four cases, kidney function is good and none has experienced a single episode of rejection in 13 to 42 months post-transplant. At the present time, they say, excluding the possibility that in these instances patient and donor just happened to be closely matched, the explanation for therapeutic success is unknown.

RESPIRATORY DISEASE

Saving hyaline membrane babies

Hyaline membrane disease claims the lives of an estimated 20,000 premature babies each year in the United States. These infants, many weighing less than three pounds at birth, die from lack of oxygen when their alveoli collapse.

Using a new form of therapy for these infants, Dr. George Gregory of the University of California at San Francisco has saved 13 of 15 patients with severe hyaline membrane disease. Conventionally such infants are given only a 3 in 10 chance of survival.

Starting with the knowledge that the alveoli collapse because chemicals regulating surface tension are not produced by cells lining the walls of the airways, Dr. Gregory developed a technique for maintaining just enough pressure to support the alveoli until the infant begins to produce the necessary chemicals himself, usually between the third and fifth days after birth. Placing a tiny tube through the patient's trachea, he then uses a respirator to maintain continuous pressure.

METABOLIC DISEASE

Enzyme theory for Fabry's disease

Fabry's disease is a genetically transmitted inborn error of metabolism whose victims accumulate a lipid called ceramide trihexoside in a variety of body tissues. Excessive build-up in the kidney generally leads to fatal kidney impairment by the time the afflicted individuals reach their early twenties.

In the Sept. 4 SCIENCE, investigators from Michigan State University and the University of Minnesota Medical School report attempts to reverse the biochemical defect by infusing patients with normal human plasma, which contains a vital enzyme Fabry's victims lack. The enzyme, ceramide trihexosidase, metabolizes the ceramide lipid that otherwise accumulates. By the tenth day after infusion, ceramide trihexoside levels had dropped 50 percent in the two individuals treated experimentally. Periodic replacement of this enzyme by plasma infusion might lead to consistently lower levels of the specific lipid and decreased accumulation, the researchers speculate, while stressing that proof of efficacy must await long-term trials that have yet to be carried out.

The work was reported by Drs. Carol Mapes, Richard Anderson and Charles Sweeley of East Lansing and Drs. Robert Desnick and William Krivit of Minneapolis.