

medical sciences

Gathered at the Second International Congress of the Transplantation Society, New York

IMMUNOLOGY

Antigen linked to cancer

While injections of mouse leukemia virus cause cancer in some strains of mice, others successfully resist the viral attack. An antigen called FMR may help explain this phenomenon, two scientists from Albert Einstein College of Medicine report.

FMR production begins almost immediately after cells are infected in susceptible animals, but does not appear at all in resistant strains, according to Drs. Frank Lilly and Stanley G. Nathenson. Experiments show that the antigen exists in two forms. Most attaches to cell membrane, but an excess spills over into the body fluids. It is probable that nucleic acids in the infecting virus carry a code for the production of this antigen.

Its chemical properties and role in the chain of biochemical events leading to disease remain unknown.

IMMUNOLOGY

Antibodies cause disease recurrence

Persons with a common and often fatal kidney disease called glomerulonephritis are likely candidates for a kidney transplant, but scientists find part of the body's normal protective system is apt to cause the original disease in the new kidney.

Dr. Raymond W. Steblay of the University of Chicago reports that blood antibodies are responsible for causing a type of glomerulonephritis characterized by inflammation of tiny blood vessels in tubes within the kidney.

These coils of blood vessels or glomeruli contain specific antigens which provoke an antibody response when they are introduced into a new body. Some of these antibodies—known as autoantibodies—inadvertently attack the body's own kidney to cause disease, he finds.

Before transplant surgery these autoantibodies, which are easily identified in the blood, should be sought, he says, and if they are present, surgery should be delayed until they have been suppressed by drugs. "If the autoantibodies are present in the recipient, the healthy kidney is in danger of being attacked and diseased."

TISSUE TYPING

Leukocyte cultures aid analysis

The threat of organ rejection, which is perhaps the gravest hazard to transplant recipients, is minimized when patient and donor have closely matching tissue types. Generally, matching is determined on the basis of serological tests akin to methods for blood group typing, but there is a large and as yet unknown number of tissue types and the young art of typing—only four years old—is not definitive. Patients now can be tested for compatibility according to the presence of a dozen known groups of transplantation antigens, but hundreds may exist.

To complement these tests, Dr. Fritz Bach of the

University of Wisconsin Medical Center recommends that donor and recipient tissue be evaluated according to a procedure called mixed leukocyte culture. The process mixes white cells, or leukocytes, from the potential donor and recipient to see how much stimulation occurs. Leukocytes have antigens on their surfaces which react with another individual's leukocytes. If dissimilar tissue is mixed, the reaction between opposing antibodies and antigens causes rejection.

MLC tests are valuable, Dr. Bach maintains, because they "register antigen reactions for which no standard antibody now exists," and because "they provide a gross quantitative measure of the whole reaction's strength."

IMMUNOSUPPRESSION

Cancer threatens transplant patients

A prerequisite for success in organ transplants is a regimen of drugs to suppress the immune system and prevent it from destroying the foreign tissue. One of the newest and most effective, given in combination with other drugs, is ALG or antilymphocyte globulin, strongly advocated in the past by Dr. Thomas Starzl and his colleagues at the University of Colorado Medical Center, Denver.

Now, this same group reports a possible connection between prolonged use of immunosuppressive drugs and cancer. Dr. Israel Penn reports that five kidney transplant patients—three in Denver, one in Minneapolis and one in Scotland—developed malignant lymphomas after receiving new kidneys, despite the fact that none of the donors had or has developed cancer. The drugs that stripped these patients of their immune defenses may have laid them open to invading cancers.

Although the five are only a small fraction of the 1,750 persons who have received kidneys, the finding raises new concern among scientists searching for ways to combat immunological problems associated with transplants.

ROUNDUP

Transplant registries planned

The United States is setting up a heart transplant registry to record treatment methods, surgical techniques and results of all heart transplants. . . . European scientists are organizing a cooperative called Eurotransplant to salvage and exchange kidneys and other organs from persons dying in northern European countries. . . . Dr. Theodore Cooper, director of the National Heart Institute, Bethesda, Md., estimates that as many as 81,000 persons might be candidates for a heart transplant in any one year, and there are probably not more than 91,000 potential donors, which means that other approaches to the problem—such as transplants from animals and heart assist machines—will have to be exploited. The odds against members of the two groups being in the same place at the same time are too formidable.