MEDICINE

Serum Made Safe For Even Protein-Sensitive Patients

New Process Changes Chemical Nature of Serum Protein Making It Harmless But Leaving It Effective

A NEW chemical process that is expected to eliminate all danger from protective or curative serum administrations was reported by Prof. J. Bronfenbrenner of Washington University, St. Louis, at the meeting of the American Association of Immunologists in Cleveland.

The use of these sera has become increasingly popular for treating diseases and for giving protection from diseases. Toxin-antitoxin for diphtheria and antitetany injections are familiar examples. Occasionally, however, such serum injections are followed by grave complications and even death. This has made some physicians hesitate to use the sera.

Only one in 20,000 of those receiving serum for the first time develop alarming symptoms and only one in 50,000 die as a direct result of the treatment. Medical scientists are trying now to eliminate this last bit of hazard.

The reason for the hazard is that some persons have a specific sensitivity to foreign protein. Such are the victims of asthma and hay fever. The same protein does not always affect all sensitive individuals, some being sensitive to the protein of horse serum, and not sensitive to serum from other animals or to protein from other sources.

The human race may be divided into four categories with respect to their response to injections of these sera, Professor Bronfenbrenner pointed out. Some, about one-tenth, have no ill effects after the injections. A small group, about one in 20,000, respond to injection of horse serum by an immediate violent reaction leading to collapse and sometimes death.

The bulk of people when given serum injections have so-called serum sickness to a more or less severe degree, varying from soreness at the point of injection to generalized fever and indisposition. These are considered normal in their reactions, however. The fourth group is composed of persons who may have reacted normally originally, but who became sensitive to serum as a result of previous injection. These may develop serum sickness very quickly and some of them may suffer severe complications and even die.

The process developed by Professor Bronfenbrenner and colleagues, D. M. Hetler and I. O. Eagle of Washington University, changes the chemical nature of the serum protein, so that it loses the quality of causing a specific reaction to it, but at the same time the immunizing or curative properties of the serum are left almost as effective as they were in the original serum.

Studies with animals showed that the new preparations of sera were not toxic. Further improvement of the chemical procedures is being sought in order to leave the curative and immunizing properties of the sera unaffected in potency.

Danger lurks in typhoid vaccine if it is improperly prepared, stored too long or not accurately tested, Prof. Stuart Mudd of the University of Pennsylvania told the meeting. He discussed a small epidemic which occurred in an institution where inferior anti-typhoid vaccine was used.

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Leukemia Disease of Blood Combated by Rabbit Serum

THE conquest of a fatal disease, lukemia, will soon be made as the result of experiments reported to the American Association of Pathologists and Bacteriologists by Dr. W. C. Hueper of the Cancer Research Laboratory of the University of Pennsylvania.

Certain kinds of cancer are closely related to leukemia, which is a riotous growth of the white blood cells and a lessening of the red cells of the blood. The successful research by Dr. Hueper and his associate, Miss Mary Russell, may therefore be an important step toward the relief of cancer itself.

The first step in the development of the new treatment for leukemia was the growing of leukocytes, or white blood cells, in tissue culture outside the human body. Dr. Hueper was successful in causing the diseased overambitious white blood cells from a leukemic patient to thrive on artificial food given them in a glass tube. Leukemic white cells were injected in a perfectly healthy rabbit, causing a fight to occur between the abnormal white blood cells injected and the protective chemical forces in the rabbit's blood that resist any unmannerly and unruly multiplication of the white cells. As a result there were built up in the rabbit's blood unusual amounts of a substance that discourages the increase of white blood cells. Serum from the rabbit's blood containing this inhibitor was used for the treatment of leukemia.

So far only one human case of the disease has been treated and this was a case of long standing. The improvement of this patient was remarkable, although a complete cure will probably not be possible.

Using their own blood, Dr. Hueper and Dr. Ellice McDonald, Director of the Laboratory, made tissue cultures and showed that the anti-leukemic serum stopped the growth of the white blood cells. This causes them to be confident that the serum when applied clinically will check the disease.

Following closely upon the successful treatment of pernicious anemia with liver extract, Dr. Hueper's anti-leukemic serum promises to make an equally important conquest of disordered white blood cell conditions. Anemia is an abnormal lessening of the red blood cells while leukemia is an abnormal increase of the white cells.

While leukemia is not a widely prevalent disease it may be found in nearly every hospital of any size. Some forms seem to be hereditary. It is nearly always fatal. Often leukemias of long standing turn into the form of cancer known as leukosarcoma, a malignancy of the glands of the body.

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