

MEDICINE

Chemical Helps Body To Fight Streptococcus Infections

New Treatment Promises Aid Against Infections Such As Scarlet Fever and Erysipelas; Does Not Kill Germs

FIRST American use of a new chemical that promises to be a potent weapon against dangerous streptococcus infections, ranging from septic sore throats to scarlet fever, erysipelas and puerperal fever, was reported to the Southern Medical Association at its meeting in Baltimore.

Successful results of the treatment in 17 out of 19 patients and convincing laboratory experiments with mice were described by Drs. Perrin H. Long and Eleanor A. Bliss of the Johns Hopkins Medical School.

The medicine comes in two forms. One is a bright red solution for hypodermic injection, known by the trade name of Prontosil. The other is a tasteless white tablet to be taken by mouth, which looks like aspirin and is called Prontylin. The two are closely related chemically. They were first tried in Germany and are products of the German Dye Trust. Besides these two, Drs. Long and Bliss have tried other related chemicals. Chemists will know them as para-amino-benzene-sulfonamide and certain of its chemical derivatives.

The chemicals do not kill the dangerous streptococcus germs. But they check the growth of the germs and damage them so that they become ready prey to the disease-fighting white blood cells of the patient's body. For this reason, Dr. Long pointed out, the chemical treatment cannot be expected to succeed in patients very near death from the infection. The chemicals must have at least 36 hours to work in, and the patient must have enough fight left in his body to destroy the germs after the chemicals have damaged them and checked their growth.

Many Diseases Affected

Theoretically the chemical treatment should work in any disease caused by hemolytic streptococci, including wound infections with streptococci. Actually the Baltimore investigators have treated patients suffering from erysipelas, infectious abortion, scarlet fever, acute tonsillitis caused by streptococcus infection, chronic cystitis, chronic impe-

tigo, infections of the eye following injuries, otitis media (inflammation of the middle ear), and mastoid disease with septicemia.

The chemical treatment has been used by numerous German and French physicians who all reported successful results. Dr. Long became interested last summer when he heard Dr. Leonard Colebrook of the English Medical Research Council and Dr. Méave Kenny and associates on the honorary staff of Queen Charlotte's Hospital, London, report their successful results with the treatment at a medical meeting in London. Dr. Long brought some of the chemicals back with him to Baltimore, as they were then not available in America.

Experiments were at once started with mice. Doses of virulent streptococci

which had never failed to kill a mouse were injected into the peritoneal cavity of these animals. The animals were then treated with Prontosil solution and all survived. Those untreated died of the streptococcus infection.

On Sept. 6 the first patient in the United States was treated with the chemical. Since then, 18 others have been treated, all but two recovering following the treatment. The Baltimore investigators expect to continue the work during the coming winter.

They do not regard the treatment as a cure, because they have used it in so few cases that it is too soon to be that optimistic. Their results, however, and particularly the mice studies, have led them to say that the treatment "promises to be of value" and "warrants the careful clinical use" of the chemicals "in the treatment of human beings ill with infection due to beta hemolytic streptococcus."

The "careful" use means that physicians must watch the patients being treated with the new chemicals. The chemicals are relatively non-poisonous, but too long continued use may result in fever and symptoms of poisoning, and possibly other, as yet unknown, harm. The chemicals were given to one normal person who



WHO IS HE?

Not the member of some hooded order, nor even a deep-sea diver. He is a worker engaged in sandblasting at the plant of the Briggs Manufacturing Company, and his costume is designed to protect him from the resulting dust.

developed headache and fever of 102 degrees Fahrenheit within twelve hours, from which he quickly recovered.

The Baltimore investigators feel it is important to give a large amount of the chemicals during the first 24 hours of treatment. Usually they gave them in divided doses: first a dose of Prontylin in tablet form, to be chewed up and followed by a drink of water, and later injections of Prontosil solution. The method for calculating the dosage according to the body weight of the patient was given the physicians at the meeting. The physicians were also cautioned against giving any saline laxatives during Prontosil treatment.

Case Reports

Among the cases reported by Drs. Long and Bliss were the following:

A 33-year-old patient at the Johns Hopkins Hospital suffering from infectious abortion with pelvic peritonitis. Beta hemolytic streptococci found in the uterus. The patient was gravely ill with a temperature of 106.4 degrees Fahrenheit on the day of treatment with Prontosil. She had two transfusions of citrated blood. Temperature was normal 17 hours after beginning of treatment. Recovery from the infection was uneventful.

A seven-year-old girl at the Union Memorial Hospital, Baltimore, suffering with erysipelas in the left leg. The child was gravely ill, the erysipelas spreading in spite of transfusion and antitoxin. Prontosil was given on the third day of illness and the temperature was normal within 28 hours. Recovery uneventful.

A 24-year-old young woman at the Johns Hopkins Hospital suffering with acute tonsillitis due to beta hemolytic streptococcus infection. Prontosil was given by mouth and hypodermically on the fourth day of illness. In 30 hours the temperature was normal and in 48 hours the throat was normal. The patient was discharged on the fifth day of the illness with throat cultures negative for beta hemolytic streptococcus.

Infected Ears

A 6-year-old girl, patient at Sydenham Hospital (contagious disease hospital of the Baltimore City Health Department) suffering with scarlet fever, cervical adenitis (infected glands) and otitis media in both ears. The ear drums had been lanced a number of times and both ears were discharging pus abundantly. She had a septic type of temperature, running up to 104 degrees Fahrenheit. Prontosil was given by mouth.

The temperature fell to normal in 24 hours and the ears were clear in three days.

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MEDICINE

35 Per Cent Success in Use of Spray for Polio

ABOUT one-third of those persons who used the alum picric acid nasal spray as a preventive of infantile paralysis during the epidemic in Southern states last summer were protected against the disease by this spray.

This appears from the first report of results with the spray. The report was given by Dr. Charles Armstrong, U. S. Public Health Service officer who developed the spray, at the meeting of the southern branch of the American Public Health Association.

While these results are somewhat disappointing to Dr. Armstrong and his associates, investigations are now under way which it is believed will give a more effective method of prevention in time for use next summer. Improvements along two lines are expected. One will be to make the chemical solution less irritating. The other will be to improve the method of administering it.

The picric acid-alum solution when sprayed into the nose acts to protect against infantile paralysis by setting up a barrier so that the virus cause of the disease cannot get through the lining of the nose to the olfactory nerve along which it makes its way to the brain and spinal cord.

Monkeys Protected

Monkeys—24 out of 25—have been protected against the disease by this method. The spray was used on a large scale on children and young adults during the outbreak in the South last summer. Since September, Dr. Armstrong has been gathering reports on its use. The fact that it was used by laymen as well as physicians complicated the situation considerably, because the layman in many cases did not use the spray as effectively and thoroughly as a physician would have. The results show, among other things, that the method is not suitable for use except by physicians, Dr. Armstrong commented.

A house-to-house survey was made of 20 representative districts in Birmingham and 7 districts in surrounding Jefferson County. In this group, 5,010 persons out of a total of 8,093 used the

spray at least once. (The directions were to use it every other day for a week and then once a week for the duration of the epidemic.) If the same rates prevailed in the entire area of Birmingham city and Jefferson County, 270,000 persons were sprayed and 160,000 were not, it is calculated.

In the sprayed group 7 cases of infantile paralysis developed. In the unsprayed group, 8 cases developed. Calculating the number among the sprayed group who might have been expected to get the disease on the basis of the percentage among the unsprayed who developed it, Dr. Armstrong got a ratio of 16 to 21.7. This indicates that about one-third, or 35 per cent, were protected by the spray.

Untoward symptoms and transitory complaints of headache, nausea, burning of the nostrils and the like were reported by 885 of 4,631 sprayed persons. In the entire area where the spray was used, 7 cases of hypersensitiveness to the spray were reported. All of the persons reporting unpleasant effects recovered from them.

Science News Letter, November 28, 1936

SURGERY

Discover Safe Kind of Surgery for "Bleeders"

A SAFE method of performing surgical operations on "bleeders" and a sort of automatic safety mechanism within their own bodies which helps protect them from fatal hemorrhage were described by Dr. Barnes Woodhall, resident surgeon of the Johns Hopkins Hospital, to the meeting of the Southern Medical Association.

This new knowledge was obtained from experience with a young Spanish lad who suffers from hemophilia, the dangerous hereditary malady which also afflicts male members of the family that once ruled Spain. The Count of Covadonga, formerly heir to the Spanish throne and a sufferer from this disease, nearly died recently of a hemorrhage that followed a minor surgical operation. Electrosurgery might have spared him this almost disastrous experience, it appears from the cases Dr. Woodhall reported.

By using a high frequency electroscalpel and coagulation unit, which seals the blood vessels as the tissues are cut, surgeons at the Johns Hopkins Hospital were able safely to amputate a thumb of the (*Turn to page 349*)