Résumé

TRICHOMYCIN, AN ANTIBIOTIC WITH ANTIFUNGAL AND ANTIPROTOZOAL ACTIVITIES

SEIGO HOSOYA

Institute for Infectious Diseases, Tokyo University

The mycological characteristics of trichomycin-producing streptomycete, the isolation and purification of trichomycin, its biological and its effect on experimental and clinical mycotic and protozoal infections were reviewed.

Trichomycin-producing H-2309 strain was found to be a new species and named *Streptomyces hachijoensis* n. sp. The aerial mycelium has pinkish buff to pale pinkish cinnamon color and secondary whirls, but it does not produce brown soluble pigment on protein media.

Trichomycin was primarily extracted from the mycelium of *S. hachijoensis* obtained by the tank fermentation, and could be highly purified by the countercurrent distribution method, giving yellow powder. By the hydrogenation of trichomycin, white crystalline substance was obtained.

Trichomycin is highly active against various fungi, trichomonads, *Treponema pallidum*, and *Endoamoeba histolytica* both *in vitro* and *in vivo*.

Trichomycin showed a marked beneficial effect on *Trichomonas vaginalis* vaginitis, vaginal moniliasis, other mycotic infections of vagina, and otitis media due to candida species.

Excellent results were also obtained by treating experimental and human trichophytosis with trichomycin ointment. Experimental moniliasis of mice could be effectively treated by the parenteral and oral administration of trichomycin.

CLINICAL APPLICATION OF TRICHOMYCIN IN GYNECOLOGY AND OBSTETRICS

MASANAO MAGARA, M. D.

Nippon Medical College

Trichomycin is an antibiotic having a powerful action upon *Trichomonas vaginalis*, *Candida albicans* and anaerobic bacteria, and the trichomycin vaginal tablet has excellent effect in the treatment of *Trichomonas vaginalis* vaginitis, vaginal moniliasis and the anaerobic infection of the vagina.

TREATMENT OF BACTERIAL PNEUMONIA BY ANTIBIOTICS

YASUSHI UEDA, JIRO KUCHIBA, TOSHIRO NAKAYAMA and KIYOE HASEGAWA

Department of Internal Medicine, Tokyo Jikei-kai School of Medicine

From 1949 to 1953, we have made an investigation on 54 cases of bacterial pneumonia (mostly pneumococcal), which were treated mainly with erythromycin and chlortetraycline (aureomycin). Out of these 54 cases, 42 cases were lobar pneumonia, 11 cases having been broncho-pneumonia.

1) By the administration of penicillin in aqueous solution, at long intervals, effective results were obtained in 42 cases, but in 8 cases the results were negative. In 7 cases out of these 8 cases, other antibiotics were used.

2) By administrating erythromycin through the mouth, effective results were obtained in 7 cases. Out of these 7 cases treated with erythromycin, 5 cases had already shown no effective results through the administration of penicillin.

3) As to the lowering of temperature, penicillin induced a crisis form, but few cases showed a lysis type. Most of those cases in which erythromycin was used, showed the lysis form instead of the crisis. In more than 2/3 of the cases, in which penicillin was used, the initial drop of temperature started within 48 hours after injection. However, most of those cases, in which erythromycin was used, were not so clear as in the cases, in which penicllin was employed and it seems that more time is required to complete the lowering of temperature.

4) Considering from the findings of the physical and roentgenological examination of the chest and the blood examination, no difference between the cases, in which penicillin was used and those, in which erythromycin was employed, was observed.

5) Out of 54 cases, 7 cases showed complications with one fatality.

6) Sensitivity *in vitro* of pneumococcus, —— penicillin 0.016~0.42 u/cc, bacitracin 0.006~0.0125 u/cc, erythromycin 0.00075~0.031 mcg/cc, streptomycin 0.5~1.0 mcg/cc, chlortetracycline (aureomycin) 0.125 mcg/cc, oxytetracycline (terramycin)

0.031～0.5 mcg/cc, chloramphenicol 0.25～1.0 mcg/cc, carbomycin (magnamycin) 0.125～1.0 mcg/cc.

7) The acquisition of drug-resistance by the pneumococcus is most marked in streptomycin and erythromycin, that of erythromycin being more than 100 mcg/cc.

8) The recovery of drug-resistance for erythromycin was not recognized in 15 generation serial cultivation.

EXPERIMENTAL STUDIES ON LOCAL PENICILLIN TREATMENT FOR ACUTE OSTEOMYELITIS

CHUICHI ISHIDA

Department of Surgery, Keio Gijuku University School of Medicine
(Prof. Dr. N. SHIMADA)

Clinical and pathologic results of local penicillin treatment were studied in acute osteomyelitis, which had been experimentally induced in rabbits tibia. Penicillin diffusion in the blood after local injection at different stages of the disease and the effect of mixing hyaluronidase with penicillin were also observed. The results of these studies were as follows :

1. Circulatory disturbance was observed to occur in the bone marrow at a certain stage of the disease. Local penicillin treatment seemed theoretically sound at this stage and was actually shown to give satisfactory results.

2. Roentgenologically and pathologically analyzed, local administration of penicillin for acute osteomyelitis was shown to give quicker therapeutic effects than intramuscular administration. No suppression of callus formation by the local injection could be seen.

3. The entire course of the disease was greatly influenced by the time when local administration was started. The optimum time to start the treatment is within two days from the onset of the disease, although much benefit can still be obtained even after a week.

4. Local penicillin treatment should be continued at least for two weeks : that is, as long as penicillin appearing in blood remains longer than innormal cases, or as long as hyaluronidase exerts ts shortening action on the duration of penicillin blood level.

STUDIES ON THE PENICILLIN CONCENTRATIONS DIFFUSING INTO THE INFLAMMATION FOCI, AND HISTOLOGICAL RESEARCHES FOR THE FACTORS INFLUENCING IT

KANDŌ KŌ

Department of Surgery, Keio University Medical School
(Director : Prof. NOBUKATSU SHIMADA)

Currently, the determination of dosage and interval in the penicillin adminstration is aided chiefly by its concentration rates in the blood, but, we believe, it would be of greater value to investigate the penicillin rate diffusing into the affected region in which the pathogenic organisms exsist. From this viewpoint, our experiments were carried out.

Using a great number of rabbits infected subcutaneously and intraperitoneally with the *Staphylococus aureus* including the strain of high and mild virulence, concentration rates both in the blood and in the affected region were estimated 1～6 hours after intramuscular injection. When the measurement isended, each rabbit was biopsied for investigating the relationship between penicillin diffusion rate and the histological appearance of the surrounding tissue. These experiments were started on the first day and continued to the 10 th day of the inflammation. As a control, inflammation caused by aforeign body was studied.

The results were summarized as follows.

1. Penicillin which is absorbed into the blood after intramuscular injection increases rapidly to a high level and disappears in a short time, on the contrary, it gradually diffuses into the affected region and remains low for a long time.

2. Among the subcutaneous and intraperito neal inflammation foci, in the former the penicillin rates are noticed higher than in the latter, when the same doses of penicillin are administered.

3. In the region infected with a highly virulent strain, penicillin is more difficult to spread than in that with a mildly virulent strain.

4. In general, the penicillin rate demonstrated in the inflammatory focus, either caused by organisms or a foreign body, shows a remarkable variation along the course of infection.

The reasons of the preceding variaton in the penicillin rate are elucidated by our histological research, which is concluded below.

1) Disturbance of circulation in the local vessels, 2) Damaged tissues and cells, 3) Metachromatic ground substances in granulation tissue, and 4) Formation of the fibrous tissue around the infective region are the restrictive factors, and 5) The considerable new formation of capillaries promotes penicillin on the contrary.