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TREATMENT OF ACUTE GONORRHOEAL URETHRITIS IN THE MALE WITH A SINGLE INJECTION OF OXYTETRACYCLINE*†

BY

E. M. VANDER STOEP

United States Public Health Service, Houston, Texas

C. HUNTER MONTGOMERY

Houston, Texas

AND

JOHN M. KNOX

Department of Dermatology, Baylor University College of Medicine, Houston, Texas

An antibiotic used in a venereal disease clinic in the routine treatment of acute gonorrhoea must be therapeutically effective, injectable, and relatively non-allergenic. It is best if given in one clinic visit, and it should be neither excessively painful nor prohibitively expensive. Except for allergenic properties, penicillin is such an antibiotic, and is, therefore, at the present time the foundation of the treatment programme for gonorrhoea. Unfortunately, the increasing incidence of penicillin sensitivity (Olsen, 1958; Welch, Lewis, Weinstein and Boeckman, 1957; McFarland, 1958) and the increasing number of penicillin-resistant gonococci (Reyn, Korner, and Bentzon, 1958; Thayer, Perry, Field, Martin, and Garson, 1960) have challenged the usefulness of penicillin in gonorrhoea treatment.

A number of other drugs (Braff, David, Perkins, Koch, Gara, and Stephens, 1956; Perkins, Koch, Gara, Stephens, and David, 1955) have been thought to be of value in the treatment of acute gonorrhoea, but none has been shown to be as satisfactory as penicillin in terms of the criteria given above. Before undertaking our present study we have tested 1 g. streptomycin and 2 g. chloramphenicol as potential penicillin substitutes in the treatment of gonorrhoea. Using the method described below both these schedules yielded a discouragingly high treatment failure rate of about 30 per cent. The present study reports three dosage schedules of a newly available preparation of oxytetracycline, in an aqueous propylene glycol base with 2 per cent. lidocaine added.‡

Ideally, each patient in a gonorrhoea treatment study should be examined with two post-treatment cultures and should abstain from sexual intercourse during the study period. However, we know our patients will not refrain from intercourse, and that less than one half will return for follow-up.

Methods other than ideal must eliminate or equalize the factors of re-infection and of treatment failure. The method used herein assumes these factors to be constant for any given period of time, so that the reported failure rate is a direct function of the true failure rate. When the failure rate calculated for the drug under investigation is compared with a rate similarly calculated for an adequate dose of penicillin, a practical and useful assessment of the value of the study drug can be made.

The following dosage schedules were administered on alternate weeks.

(1) 250 mg. intramuscular oxytetracycline.
(2) 500 mg. intramuscular oxytetracycline.
(3) 250 mg. intramuscular oxytetracycline at the time of diagnosis and 250 mg. repeated after 48 hrs. (This schedule was added toward the later part of the study.)
(4) 1,200,000 units procaine penicillin G in oil with 2 per cent. aluminium monostearate (PAM).

All the male patients seen at the Houston Venereal Disease Clinic with a clinical diagnosis of acute gonorrhoeal urethritis had cultures taken and were given the drug which was in use that particular week. Only patients with a positive culture for gonorrhoea were included in this study. Patients were not told what drug they were to receive or that they were being included in an investigation. Patients who returned to the clinic with reappearance or non-disappearance of symptoms had cultures repeated. The question whether to re-treat the patient at this time was left

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to the clinician's discretion. The patients who voluntarily returned to the clinic within 30 days and were again culturally positive were counted as failures. The 30-day period may seem longer than necessary, but it was selected to make certain that all failures were counted, and in order to demonstrate the constancy of the re-infection rate after the first 10 to 12 days. Evaluation is based on the percentage of treatment failures.

Results

Of 997 patients included in the present study, 365 received 250 mg. intramuscular oxytetracycline; 197 received 500 mg. intramuscular oxytetracycline; 91 received 250 mg. intramuscular oxytetracycline and an additional 250 mg. after 48 hrs; and 344 received 1,200,000 units PAM.

The Figure indicates that the patients on schedules 2 and 4 (500 mg. intramuscular oxytetracycline and 1,200,000 units PAM) had similar cumulative failure rates of 8 per cent. in 30 days. Those on schedule 1 (250 mg. intramuscular oxytetracycline) had a failure rate of 17 per cent. at 30 days, approximately 9 per cent. higher than those on PAM. Those on Schedule 3 had a failure rate of 12 per cent., 4 per cent. higher than those on PAM.

It was interesting to note that all seven patients on Schedule 3 who failed before the 16th day had positive cultures when they received their second injection.

No allergic manifestation was observed after the use of intramuscular oxytetracycline, but this drug does cause considerable pain when given intramuscularly. For the first 4 hours little discomfort is experienced; but about 4 hours after the injection, probably after the effect of the lidocaine has worn off, many patients complained of muscular stiffness and soreness at the injection site. Surprisingly, when the drug was injected into the deltoid muscle, less discomfort was experienced than when it was given into the gluteal muscles.

Summary and Conclusions

(1) 500 mg. intramuscular oxytetracycline appears to be as satisfactory as 1,200,000 units PAM

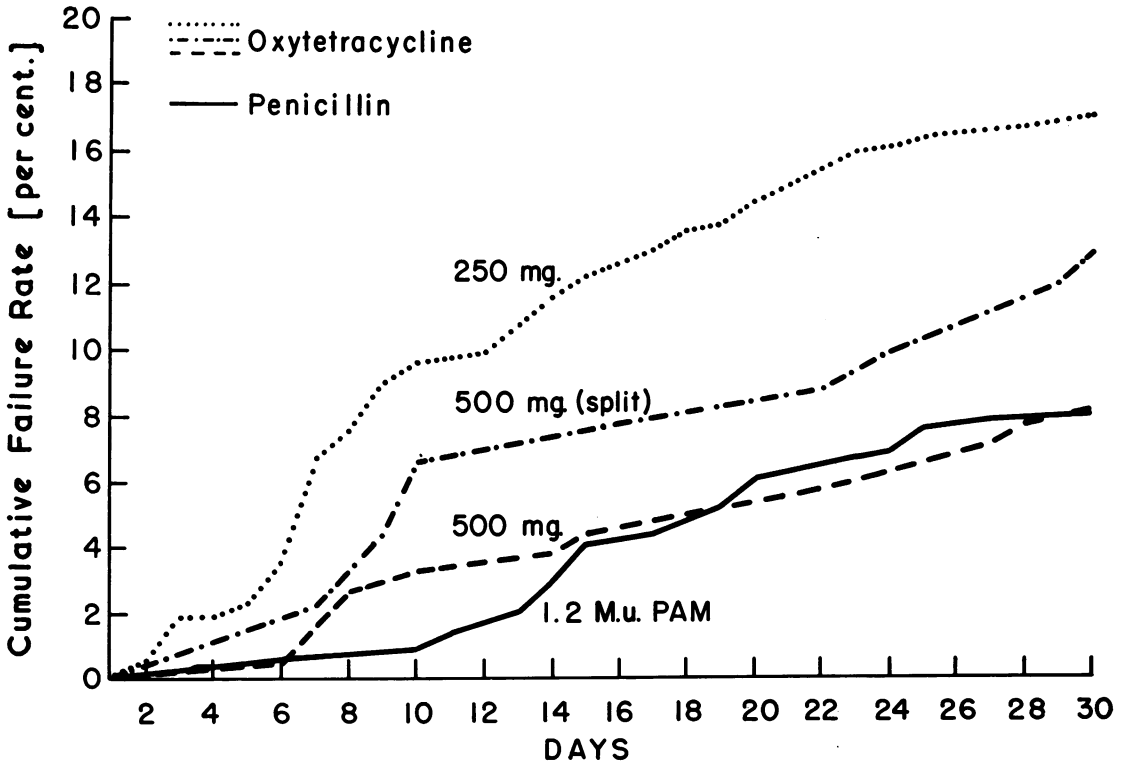

FIGURE.—Cumulative failure rate per cent. with four dosage schedules.

for the treatment of acute gonorrhoea in the male, but 250 mg. proved to be unsatisfactory.

(2) 250 mg. intramuscular oxytetracycline followed by an additional 250 mg. after 48 hrs does not appear to be as satisfactory as the single dose of 500 mg.

REFERENCES

Braff, E., David, W., Perkins, H., Koch, R., Gara, G., and Stephens, W. (1956). *Antibiot. Med.*, **2,** 110.

McFarland, R. B. (1958). *New Eng. J. Med.*, **259,** 62.

Olsen, C. R. (1958). *Stanford med. Bull.*, **16,** 238.

Perkins, H. A., Koch, R. A., Gara, G., Stephens, W. W., and David, W. D. (1955). *Antibiot. Med.*, **1,** 504.

Reyn, A., Korner, B., and Bentzon, M. W. (1958). *Brit. J. vener. Dis.*, **34,** 227.

Thayer, J. D., Perry, M. I., Field, F. W., Martin, J. E. Jr., and Garson, W. (1960). XI Annual Symposium on Recent Advances in the Study of Venereal Diseases, Chicago, Illinois.

Welch, H., Lewis, C. N., Weinstein, H. I., and Boeckman, B. B. (1957). *Antibiot. Med.*, **4,** 800.

Traitement de l'urétrite gonococcique aiguë de l'homme par une seule injection d'oxytétracycline

Résumé

(1) 500 mg. d'oxytétracycline intramusculaire semblent être aussi efficaces que 1.200.000 unités de PAM (pénicilline retard) dans le traitement de la gonorrhée aiguë de l'homme, mais 250 mg. ne suffisent pas.

(2) Deux doses de 250 mg. d'oxytétracycline intramusculaire administrées à 48 heures d'intervalle ne semblent pas avoir autant d'efficacité qu'une seule dose de 500 mg.