KANAMYCIN IN THE TREATMENT OF GONOCOCCAL URETHRITIS IN MALES

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SUMMARY

A consecutive series of 56 male patients with uncomplicated gonococcal urethritis were treated with 2 gm of kanamycin intramuscularly. Twenty (35.7 per cent) specimens of gonococcus were PPNG, while 36 (64.3 per cent) were non - PPNG. An overall failure rate of 12.2 per cent was observed. Further breakdown showed failure rate of 20 per cent with PPNG and 7.7 per cent with non - PPNG.

INTRODUCTION

Southeast Asia is the hotbed of Gonorrhoea morbidity. [1] The Centre for Disease Control (CDS) of the United States recommends, as a first line treatment for uncomplicated gonorrhoea, the use of either procaine penicillin (4.8 megaunits intramuscularly) as a single dose combined with 1 gm of probenecid orally; or ampicillin 3.5 gm (or amoxyllin 3.0 gm) with 1 gm of probenecid orally. [2] However, both chromosomal resistance and the emergence of a new strain of gonococcus that produces penicillinase (PPNG) in S.E. Asia pose serious problems. PPNG has reached grave proportions and its prevalence is reported to be 30 to 50 per cent of all isolates in the region. Hence, a failure rate of at least 30 per cent is to be expected if penicillin or ampicillin is used. [3,4] To counter the high incidence of failure treatment, the aminoglycosides, spectinomycin and the cephalosporins are widely used, especially when patients cannot come for follow up for tests of cure.

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MATERIALS AND METHODS

The purpose of this report is to describe observations made at a private clinic on a consecutive series of 56 male patients of mixed ethnic and age groups. It was decided right from the start to exclude relapsing patients requiring retreatment as well as any patient known to be suffering from renal disease. However, as it turned out, there was no such case in either category presented in this particular study.

At the initial visit, intraurethral specimens of urethral discharge were collected using platinum bacteriological loops. A smear was made and examined microscopically for pus cells and intracellular gram-negative diplococci. A separate specimen was taken for immediate culture on Thayer Martin medium containing vancomycin, colistin and the anti-fungal agent, nystatin. The culture plates were incubated in a candle jar at 36°C for 1 day. If no growth was obtained after 24 hours, the plates were reincubated for an additional 24 hours. An oxidase test and gram stain were performed on colonies suspected of being gonococci. Confirmation of the isolates were carried out by sugar fermentation tests on cystine trypticase agar. The carbohydrates used were glucose, maltose, sucrose and lactose added in 1 per cent concentration. In addition, the coagglutination test (Phadebact Gonococcal Test) was also used for confirmation of isolates. The agar plate diffusion method was used to determine the antibiotic sensitivity pattern of all isolates. Penicillin susceptibility was tested using discs

containing 10 units of penicillin G. Where the zone of inhibition of growth was less than 20 mm in diameter, a beta-lactamase test was done using the acidometric method.

At the initial visit, all patients with positive results from direct microscopy were given 2 gms of kanamycin sulphate intramuscularly. After treatment, all patients were told to drink plenty of bland fluids for 24 hours. The patients were then asked to come back 48-72 hours later for re-examination and cultures of urethral specimens for tests of cure. Where no discharge was present, intraurethral scrapings were performed. The criteria for failure of treatment was positive smear or culture in patients without further sexual contacts after treatment.

RESULTS

The epidemiological characteristics of the patients seen are shown in Table I and Table II.

TABLE I
DISTRIBUTION OF 56 MALE PATIENTS WITH GONOCOCCAL URETHRITIS BY AGE

AGE GROUP IN YEARS	NUMBER	PERCENTAGE
19 and below	2	3.6
20 - 29	37	66.1
30 - 39	12	21.4
40 - 49	4	7.1
50 - 59	1	1.8
60 - 69	0	0
70 - 79	0	0
TOTAL	56	100

TABLE II
DISTRIBUTION OF 56 MALE PATIENTS WITH GONOCOCCAL URETHRITIS BY ETHNIC GROUP

ETHNIC GROUP	NUMBER	PERCENTAGE
CHINESE	42	75.0
MALAYS	8	14.2
INDIANS	2	3.6
CAUCASIANS	2	3.6
OTHERS	2	3.6
TOTAL	56	100

Chinese patients form the majority because the population under study is predominantly Chinese. Fifteen (26.8 per cent) of the patients did not come for follow-up for tests of cure and hence had to be excluded from further study, leaving 41 patients for assessment. Out of the 56 isolates, 20 were PPNG (35.7 per cent) and 36 were non-PPNG (64.3 per cent). As seen in Table III, out of the 41 patients who completed their assessment, 36 were successfully treated, giving an overall cure rate of 87.8 per cent. Successful treatment was seen in 12 out of 15 with PPNG (80 per cent), and 24 out of 26 with non-PPNG (92.3 per cent).

TABLE III
OUTCOME OF TREATMENT WITH 2 GM I/M KANAMYCIN SULPHATE IN 56 MALE PATIENTS WITH GONOCOCCAL URETHRITIS

TOTAL NO. OF CASES	P P N G			NON - PPNG		
	De-faulted	Failure	Suc-cess	De-faulted	Failure	Suc-cess
56	5	3	12	10	2	24

DISCUSSION

It is important in the treatment of gonorrhoea to have an agent that is effective in a single dose form since patients are unreliable in keeping return appointments (26.8 per cent seen in this study) and in taking medication at home at prescribed times. A failure rate of at least 30 per cent is to be expected if the penicillin or penicillin-related drugs are used. [3,4] A failure rate of 12.2 per cent with the use of kanamycin 2 gm i.m. was found in this study. Rajan [3] reported that with increasing use of kanamycin, early infectious syphilis rates were noticed to rise in Singapore, as well as increasing failures among non-PPNG strains were observed. A combination of kanamycin and ampicillin is being recommended in Singapore. [3]

The epidemiological control of syphilis would be greatly enhanced if gonorrhoea therapy was simultaneously curative for incubating syphilis. In a cooperative study, Schroeter *et al* found that aqueous procaine penicillin G (given intramuscularly in dosages of 2.4 and 4.8 millions units for males and females respectively) was curative for coexisting incubating syphilis in 127 patients with gonorrhoea. [6]

Side-effects of kanamycin include deafness which

is more commonly seen than dizziness. The use of one dose at a time over wide intervals appears safe, if renal function is normal and adjustment is made for poor renal reserve in old age (Prof. F. Wang — personal communication). To cut down the side-effects of kanamycin and to prevent emergence of further resistance, the author recommends periodical change of antibiotic at three monthly intervals. The author further recommends that kanamycin should not be used more than 10 gm in one year as the toxicity is greater.

Cefotaxime is a new cephalosporin which is very effective in the treatment of gonococcal infections, both PPNG and non-PPNG. [4,5] The author decided to use cefotaxime 500 mg with 1 gm of probenecid orally on the five patients who failed treatment in this study. All responded to the treatment successfully.

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