

# SINGLE-DOSE ORAL AMPICILLIN IN THE TREATMENT OF GONOCOCCAL URETHRITIS IN MALES

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## SUMMARY

*One hundred and eight consecutive previously-untreated males with gonococcal urethritis were treated with single-dose oral ampicillin under supervision. A high failure-rate of 41.5 percent was obtained. The main cause of failure was the high incidence of penicillinase-producing Neisseria gonorrhoeae - an overall incidence of 37.2 percent was obtained.*

## INTRODUCTION

Penicillin and its analogues have been, and still are, the drugs of choice in the treatment of gonorrhoea in most parts of the world. The United States Centre for Disease Control recommends, as first line single-dose treatment, the use of either aqueous procaine penicillin G (4.8 mega-units intramuscularly as a single-dose with oral probenecid 1 g by mouth) or ampicillin 3.5 g (or amoxycillin 3.0 g) with probenecid 1 g orally. The

aim of this paper is to determine the efficacy of penicillin analogues, as exemplified by single-dose oral ampicillin, in the treatment of uncomplicated gonococcal urethritis in males.

## MATERIAL AND METHODS

This is a prospective single-blind clinical trial of successive male patients attending the Genito-Urinary Medicine Clinic, Physicians' Clinic, Universiti Kebangsaan Malaysia situated within the General Hospital complex in Kuala Lumpur.

One hundred and eight consecutive previously-untreated males with micro-biologically-proven gonococcal urethritis were seen between the periods of August-December 1980. Patients with a history of hypersensitivity to penicillins were excluded from the trial.

At the initial visit, intraurethral specimens of urethral discharge were obtained and plated immediately onto VCNT and chocolate media which were then incubated at 38°C in a CO<sub>2</sub>-enriched atmosphere. The patients were then given oral ampicillin 3.5 g and probenecid 1 g under direct supervision.

The patients were then asked to return 48-72 hours later for re-examination and culture of specimens. Where no discharge was present, intraurethral scrape was performed. Specimens obtained were subcultured in the microbiology lab. Confirmation of *Neisseria gonorrhoeae* was

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TABLE I  
PATIENTS BY AGE

AGE GROUP IN YEARS	NUMBER
19 and below	8 ( 7.4%)
20 - 29	78(72.2%)
30 - 39	13(12.0%)
40 - 49	5( 4.6%)
50 - 59	2( 1.9%)
60 - 69	0( 0%)
70 - 79	2( 1.9%)
Total	108

performed by the Phadebact co-agglutination test technique while beta-lactamase strains were confirmed by the Beta-lactam test-strip method. A sensitivity disc study (Stokes method) was used to determine sensitivity patterns. The criteria for failure of treatment was taken as positive smear or culture without further sexual contact after treatment.

## RESULTS

The epidemiological characteristics of the patients seen are as shown in Tables I and II. As expected, the majority of the patients (78/72.2 percent) were from the sexually-active age group. The racial distribution was roughly equal between Chinese and Indians, with the incidence highest amongst Malays (45/41.6 percent).

Of the total number of 108 patients, 14 did not return for follow-up visits, leaving 94 assessable patients. Of these, cure was achieved in 55 patients (58.5 percent). Table III illustrates the results in greater detail. It was found that of the 39 patients who were treatment-failures, 35 were infected by the PPNG (penicillinase-producing *Neisseria gonorrhoeae*) strain, giving an overall incidence of

TABLE II  
PATIENTS BY ETHNIC GROUP

ETHNIC GROUP	NUMBER	(% OF TOTAL)
Chinese	29	(26.9%)
Malays	45	(41.6%)
Indians	30	(27.7%)
Caucasians	2	( 1.9%)
Others	2	( 1.9%)
TOTAL	108	(100%)

TABLE III  
TREATMENT RESULTS FOLLOWING  
SINGLE-DOSE ORAL AMPICILLIN

RESPONSE	PPNG	NON-PPNG	TOTAL
CURE	0	55	55 (58.5%)
FAILURE	35	4	39 (41.5%)
	35 (37.2%)	59 (62.8%)	94 (100.0%)

(PPNG - penicillinase-producing *Neisseria gonorrhoeae*)

PPNG as 37.2 percent. Only 4 patients who were infected by the non-PPNG strain were treatment-failures and these coincided with the in vitro sensitivity disc study of resistance to penicillin.

The side-effects following therapy was also obtained by direct questioning and the results are shown in Table IV. There were no side-effects in the vast majority of the patients (86/91.5 percent). The in vitro sensitivity patterns are illustrated in Table V. It was found that sensitivity was lowest with penicillin (53 strains/49.1 percent) while in the remaining 5 antibiotics, sensitivity was greater than 80 percent.

## DISCUSSION

Single-dose oral ampicillin is the most common form of treatment for gonorrhoea in England and Wales. Increasing bacterial resistance against the penicillin group of antibiotics, particularly in Southeast Asia, has necessitated progressively larger doses being used. While the standard dosage in United Kingdom is ampicillin 2 g with probenecid, it has been recommended that in Southeast Asia, a minimum dosage of ampicillin 3.5 g with probenecid be prescribed. Our study shows that even at this high dosage, the incidence of side-effects is low.

TABLE IV  
SIDE-EFFECTS OF THERAPY TO SINGLE-DOSE  
ORAL AMPICILLIN

NO SIDE-EFFECTS	86 (91.5%)
SIDE-EFFECTS	
Nausea	2
Giddiness	4
Gastric irritation	2
TOTAL	94

TABLE V  
IN VITRO SENSITIVITY PATTERN TO 6  
ANTIBIOTICS FOR 108 STRAINS OF N.  
GONORRHOEAE

ANTIBIOTIC	SENSITIVE	RESISTANT
Cefuroxime	105 (97.2%)	3
Cotrimoxazole	87 (80.6%)	21
Erythromycin	106 (98.1%)	2
Kanamycin	106 (98.1%)	2
Penicillin	53 (49.1%)	65
Tetracycline	93 (86.1%)	15

However, the effectiveness of this oral regime is hampered further by the high proportion of penicillin-resistant strain, which, being unsusceptible to the penicillin group of antibiotics, contributed to the high failure rate obtained in this study (41.5 percent — 39 of the 94 patients).

It is recommended that, where close monitoring of the patient is not possible or where microbiological facilities are inadequate, first-line drug therapy for uncomplicated gonorrhoea should consider the possibility of PPNG infections and drugs such as spectinomycin, kanamycin and the newer cephalosporins should be prescribed.

## REFERENCES

Adler, M.W. *et al* (1978) Diagnostic treatment and reporting

criteria for gonorrhoea in sexually transmitted diseases clinics in England and Wales, *Brit. J. Vener. Dis.*, 54 : 10 - 23.

American Venereal Disease Association. CDC Recommended Treatment Schedules, 1979. *Sex Transm Dis.* 6 : 38 - 40.

Barnham M. Glynn A.A. (1978). Identification of clinical isolates of *Neisseria gonorrhoeae* by a coagglutination test *J. Clin Pathol* 31 (2) : 189 - 93.

Cobbold, R.J.C. *et al* (1973). Treatment of gonorrhoea with single oral doses of ampicillin plus probenecid *Brit. J. Vener. Dis.* 49 : 268 - 270.

Jorgensen J.H., Lee J.C., Alexander G.A. (1977). Rapid penicillinase paper strip test for detection of Betalactamase-producing *Neisseria Gonorrhoea* *Antimicrob Agents Chemother*, 11 : 1087 - 1088.

Morton R.S. Penicillinase-producing gonococci (editorial) (1978). *Med. J. Aust.* 2 (3) : 95 - 7.

Rajan V.S., Sng E.H., Khoo R. *et al* (1977). Beta-lactamase strains of gonococci in Singapore. *Asian J. Infect Dis.*, 1 : 62 - 64.

Stokes, E.J. (1975). *Clinical Bacteriology*, 4th edition. Edward Arnold, London : 210 - 226.

World Health Organisation. Techniques for the detection of Beta-lactamase-producing strains of *N gonorrhoeae*. *WHO Tech. Rep. Ser.* 1978, 616 : 137 - 42.