

The Efficacy of Spectinomycin, Norfloxacin and Ciprofloxacin in the Treatment of Uncomplicated Gonorrhoeae

Pratak O-Prasertsawat MD,
Samarn Phiromsawat MD,
Pansak Sugkraroek MD,
Sompol Pongthai MD, MPH.

*Department of Obstetrics and Gynaecology,
Faculty of Medicine,
Ramathibodi Hospital, Mahidol University,
Bangkok 10400, Thailand*

Abstract: *This is a prospective study comparing spectinomycin, norfloxacin and ciprofloxacin in the treatment of uncomplicated gonorrhoeae in female patients. Of 461 patients, there were 169 patients (36.7%) who had PPNG strains. The cure rate was 98.4% in the spectinomycin group (n=128), 98.6% in the norfloxacin group (n=282) and 100% in ciprofloxacin group (n=45) whether the infection was caused by PPNG or non-PPNG. (Thai J Obstet Gynaecol 1990; 2:19-22.)*

Key words : uncomplicated gonorrhoeae, spectinomycin, norfloxacin, ciprofloxacin

In the areas where penicillinase producing *Neisseria gonorrhoeae* (PPNG) strains are highly prevalent, the drugs for treatment of gonococcal infection should be highly effective for both PPNG and non-PPNG strains. The recommended treatment for uncomplicated gonorrhoeae should be in the group of spectinomycin, cephalosporins and quinolone derivatives such as norfloxacin, ofloxacin and ciprofloxacin which have been reported to be highly effective⁽¹⁾. At the outpatient Department of Obstetrics and Gynaecology, Ramathibodi Hospital, the drugs which were recommended

for treatment of uncomplicated *Neisseria gonorrhoeae* should give the cure rate of at least 95%. Spectinomycin was first used routinely for the treatment of uncomplicated gonorrhoeae. Although spectinomycin is the drug that produces an acceptable cure rate and is recommended in the treatment of PPNG strains, PPNG strains resistant to spectinomycin have been reported in many parts of the world⁽²⁻⁵⁾. Quinolone derivatives was an alternative treatment and is a single-dose oral administration. At the Department of Obstetrics and Gynaecology, Ramathibodi Hospital, norfloxacin was first

used in early 1986 and ciprofloxacin was first used in late 1988. Cephalosporins i.e. cefotaxime was used as the second line drug to treat cases resistant to spectinomycin, norfloxacin and ciprofloxacin^(6,7). The objectives of this study were to evaluate the efficacy and side effects of spectinomycin, norfloxacin and ciprofloxacin in the treatment of uncomplicated gonorrhoeae in female patients.

Materials and Methods

A prospective study was conducted at the sexual health clinic, Department of Obstetrics and Gynaecology, Ramathibodi Hospital, between January 1, 1986 and December 31, 1989. The details were obtained from the medical records. There were 461 female patients with the diagnosis of uncomplicated gonorrhoeae. The diagnosis was established by a positive culture from the central laboratory. These 461 patients were treated with one of three regimens. Regimen 1, patients received 2g of spectinomycin intramuscularly. Regimen 2, patients received 800mg of norfloxacin orally. Regimen 3, patient received 250mg of ciprofloxacin orally and the same regimens were applied to their sexual partners⁽¹⁾. In case of failure to the first treatment, patients received 500 mg cefotaxime intramuscularly after 1g probenecid orally. A repeated culture was done between day 3-10 after treatment from the urethra and cervix. The specimens were inoculated on the Thayer-Martin media and incubated at

35°C in an atmosphere of carbon dioxide. The patients were considered cured if the results of the culture were negative in all sites. If there was a positive culture in one or the other site then the treatment was considered to have failed and cefotaxime was prescribed and the patient was seen again 7 days later for culture. The efficacy was expressed in term of cure rate by culture. The patients were then asked to abstain from sexual intercourse and were asked at the follow-up visits about side effects such as drowsiness, nausea, vomiting and pain at the injection site.

Results

Of 461 female patients who entered into the study, there were 169 patients who had PPNG strains. The prevalence of PPNG strains in each year varied from 33.6 to 39.5%. The overall prevalence was 36.7% (Table 1). The cure rate was 98.4% in the spectinomycin group (n=128), 98.6% in the norfloxacin group (n=282) and 100% in the ciprofloxacin group (n=45) (Table 2). The cure rate in the spectinomycin group for PPNG varied from 92.3 to 100% in the four-year period. The average cure rate was 96.6%. In the non-PPNG the cure rate was 100%. The cure rate in the norfloxacin group for PPNG varied from 94.1 to 100%. The average cure rate was 96.8%. In the non-PPNG the cure rate varied from 98.2 to 100%. The average cure rate was 99.5%. The cure rate in the ciprofloxacin group

Table 1 The prevalence of PPNG and non- PPNG

Strains	Year	1986		1987		1988		1989		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%
PPNG		48	38.4	45	39.5	43	33.6	33	35.1	169	36.7
Non-PPNG		77	61.6	69	60.5	85	66.4	61	64.9	292	63.3
Total		125	100	114	100	128	100	94	100	461	100

Table 2 Efficacy of spectinomycin, norfloxacin and ciprofloxacin

Drugs	No.of cases	Cure		%	
Spectinomycin	128			126	98.4
Norfloxacin	282			278	98.6
Ciprofloxacin	45			45	100.0

Table 3 Efficacy of spectinomycin, norfloxacin and ciprofloxacin in PPNG strain

Drugs	Year	1986				1987				1988				1989				Total			
		Cure		Failed		Cure		Failed		Cure		Failed		Cure		Failed		Cure		Failed	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Spectinomycin		24	96.0	1	4	14	100	0	0	12	92.3	1	7.7	6	100	0	0	56	96.6	2	3.4
Norfloxacin		22	95.7	1	4.3	31	100	0	0	22	95.7	1	4.3	16	94.1	1	5.9	91	96.8	3	3.2
Ciprofloxacin		0	0	0	0	0	0	0	0	7	100	0	0	10	100	0	0	17	100	0	0
Total		46	95.8	2	4.2	45	100	0	0	41	95.3	2	4.7	32	97.0	1	3.0	164	97.0	5	3.0

Table 4 Efficacy of spectinomycin, norfloxacin and ciprofloxacin in non- PPNG strain

Drugs	Year	1986				1987				1988				1989				Total			
		Cure		Failed		Cure		Failed		Cure		Failed		Cure		Failed		Cure		Failed	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Spectinomycin		30	100	0	0	14	100	0	0	15	100	0	0	13	100	0	0	72	100	0	0
Norfloxacin		47	100	0	0	54	98.2	1	1.8	62	100	0	0	28	100	0	0	191	99.5	1	0.5
Ciprofloxacin		0	0	0	0	0	0	0	0	8	100	0	0	20	100	0	0	28	100	0	0
Total		77	100	0	0	68	98.6	1	1.4	85	100	0	0	61	100	0	0	291	99.7	1	0.3

was 100% in both PPNG and non- PPNG groups (Tables 3, 4). There were no side effects in the ciprofloxacin group, but one case in the spectinomycin group had severe pain at the injection site and 6 cases in the norfloxacin group had nausea and drowsiness. All side effects were minimal and did not warrant any treatment.

Discussion

The efficacy of various regimens including spectinomycin and quinolone derivatives, i.e. norfloxacin and ciprofloxacin for the treatment of uncomplicated gonorrhoeae whether the infection was caused by PPNG or non-PPNG strains showed little significant variation in therapeutic

efficacy^(8,9). The overall cure rates were 98.4% for spectinomycin, 98.6% for norfloxacin and 100% for ciprofloxacin. One case in the spectinomycin group had severe pain at the injection site and 6 cases in the norfloxacin group had nausea and drowsiness but none in the ciprofloxacin group. There were no side effects in the ciprofloxacin group possibly because the number of cases was few and it is too early to conclude that ciprofloxacin had no side effects. In this study, there was one case in the non-PPNG group that developed a resistance to norfloxacin at the dosage of 800mg but was sensitive to spectinomycin and ciprofloxacin. There were 5 cases in the PPNG group that developed resistance, 3 in the norfloxacin and 2 in spectinomycin groups. This failure in treatment suggested that antibiotics should be used appropriately in the treatment of uncomplicated gonorrhoeae. There is also a need to find an alternative treatment and keep some antibiotics such as cephalosporins in reserve for some resistant cases. In this study, 6 failures were treated effectively by using cefotaxime plus pro-benecid. There was no difference in the cure rates between spectinomycin and quinolone derivatives, i.e. norfloxacin and ciprofloxacin but the advantage of quinolone derivatives over spectinomycin is in its rapid absorption following oral administration, and also it costs less and is easier to administer than spectinomycin. Using the regimen described here norfloxacin and ciprofloxacin are, therefore, safe

and effective drugs in the treatment of uncomplicated gonorrhoeae caused by both PPNG and non-PPNG. Both are alternative drugs against gonococcal infection with low costs and are easy to administer.

References

1. Centers for Disease Control. Sexually Transmitted Diseases Treatment Guideline. MMWR 1989;38:22-3.
2. Adams H, Ashford W, Potts DW, et al. Spectinomycin resistant penicillinase-producing *Neisseria gonorrhoeae*, California. MMWR 1981;30:221-2.
3. Easmon CSF, Ison CA, Bellinger CM, Harris JW. Emergence of resistance after spectinomycin treatment for gonorrhoeae due to beta-lactamase producing strain of *N. gonorrhoeae*. Br J Med 1982; 284: 1604-5.
4. Patefield AJ, Westbrook WG, Johnston NA. Spectinomycin resistant *Neisseria gonorrhoeae* world wide. MMWR 1982; 31:632-8.
5. Jones O, Strohmeyers G, Brocket J, et al. Spectinomycin resistant penecillinase-producing *Neisseria gonorrhoeae*. MMWR 1983;32:51-2.
6. Kraus SJ, Reynolds GH, Rolfs RJ Jr. Therapy of uncomplicated gonorrhea due to antibiotic-resistant *Neisseria gonorrhoea*. Sex Trans Dis 1988;15:234-43.
7. Panikabutra K, Ariyarat C, Chitwarrakorn A, Warmissorn T. Cefotaxime in the treatment of gonorrhoeae caused by PPNG and non-PPNG. J Med Assoc Thailand 1982;65:271-6.
8. Crider SR, Colby SD, Miller LK, Harrison WO, Kerbs SJB, Berg SW. Treatment of penicillin-resistant *Neisseria gonorrhoeae* with oral norfloxacin. N Engl J Med 1984;311:137-40.
9. Panikabutra K, Ariyarat C, Chitwarrakorn A, Saensanoh C, Wongba C. Randomized comparative study of ceftriaxone and spectinomycin in gonorrhoeae. Genitourin Med 1985;61:106-8.