

## TREATMENT OF ACUTE UNCOMPLICATED GONOCOCCAL URETHRITIS IN MALES BY ROSOXACIN

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Twenty eight male patients with acute gonococcal urethritis were treated with rosoxacin 300 mg capsule (Eradacil) as a single-dose oral therapy. Twenty six patients were cured, while two patients did not improve. Four patients developed post-gonococcal urethritis (PGU).

**Key words :** Gonorrhoea, Rosoxacin.

Penicillin is still quite effective in most cases of gonorrhoea, but bacterial resistance is increasing against penicillin.<sup>1-3</sup> Penicillinase producing *Neisseria gonorrhoeae* (PPNG) cases have also been reported from various places.<sup>4-10</sup> In view of the resistance to various antibiotics,<sup>1,11,19</sup> the development and trial of newer antibiotics are necessary. Rosoxacin has been tried successfully in the treatment of uncomplicated gonorrhoea particularly against PPNG.<sup>12-18</sup> Here we report our experience with rosoxacin in 28 male patients having uncomplicated gonorrhoea.

### Materials and Methods

Twenty eight male patients with a history of sexual exposure, purulent discharge per urethra and burning during micturition were included in this study. The diagnosis was made on the basis of pus smear showing Gram-negative intracellular-diplococci on microscopy. At the same time pus was inoculated on Thayer-Martin medium for culture and sensitivity with penicillin and co-trimoxazole and blood was taken for VDRL test.

All patients were given a single 300 mg capsule of rosoxacin (Eradacil) on empty stomach and were advised not to eat for 2-3 hours and not to have sexual intercourse during the 2 week period of observation.

All the patients were called on the 3rd and the 7th days after treatment having held urine for at least 6 hours. Milking of urethra was

done for any urethral discharge. In cases with no discharge, the wall of the urethra was scraped with a platinum-loop and the material was inoculated for a culture and smears made for Gram-staining. Patients whose urethral smears showed intracellular Gram-negative diplococci and with a positive culture for *N. gonorrhoeae* done on the 3rd and/or the 7th day were considered resistant to rosoxacin. Patients who showed more than 10 pus cells per high power field or clumps of pus cells with no organisms and a negative culture report for *N. gonorrhoeae*, associated with burning during micturition and signs of urethral inflammation 7 days after treatment were grouped under post-gonococcal urethritis. Patients showing no pus cell or less than 5 cells per high power field after 7 days but no organisms and with a negative culture report, having no symptoms during micturition and no signs of urethritis were considered cured.

### Results

Out of 28 patients, 22 were between 18-25 years, while 6 were between 26 and 36 years of age. Twenty two patients developed symptoms within 72 hours, and 6 patients between 4 and 10 days after the last sexual exposure. The culture and sensitivity pattern is given in table I.

**Table I.** In vitro susceptibility of *N. gonorrhoeae* to penicillin and co-trimoxazole.

Number of patients	MIC (in units) penicillin	Number of patients	Susceptibility to co-trimoxazole
11	0.06	22	Susceptible
9	0.12		
2	0.24	6	Resistant
6	2.00		

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Twenty six (92.86%) out of twenty eight patients were cured. The remaining two patients had a marked reduction in the amount of pus discharge for 3-4 days, which however increased again to pretreatment level in a few days. Four (14.3%) patients developed post-gonococcal urethritis.

### Comments

Rosoxacin is an antibacterial drug which is a pyridylquinoline derivative with its chemical constitution similar to nalidixic acid. A single oral dose of 300 mg on an empty stomach produces its peak plasma level, 6.6 mg per litre, in 2 to 6 hours. In circulation, 70% of the drug is protein bound. It is metabolised in the liver and excreted in the urine.<sup>12</sup> In vitro activity of rosoxacin, fosfomycin, ciftiom and spectinomycin on PPNG isolates was done by Dickgiesser and Kuntz<sup>18</sup> and it was found that all the above drugs were effective against these organisms in sufficient concentration. Thus, they concluded that the development of PPNG which are also resistant to spectinomycin can be avoided as there are alternative drugs and spectinomycin should be kept in reserve.

In our study, the sensitivity to penicillin indicated that in 11 patients MIC was 0.06 unit. In 17 patients it was 0.12 or more, meaning thereby that they were resistant to usual therapeutic doses of penicillin.

Rosoxacin was successful for the treatment of uncomplicated gonorrhoea in PPNG and non-PPNG.<sup>18</sup> Limson and Macasaet<sup>17</sup> found 94-100% cure rate in PPNG and non-PPNG by a single oral dose of 300 mg. Seth et al<sup>1</sup> have studied in-vitro activity of rosoxacin against *N. gonorrhoeae* and shown it to be more effective than penicillin, tetracycline, cefuroxime. This activity was not affected by production of beta lactamase. In vitro study by Warren et al<sup>11</sup> concluded that there is a good correlation between the MICs of rosoxacin and penicillin

where the MIC with penicillin or rosoxacin is 0.06 mg/L, otherwise there was little correlation. In a comparative study, Calubiron et al<sup>13</sup> used 3 different dose regimens of rosoxacin and spectinomycin in pharyngeal, urethral and rectal gonorrhoea in women. All the cultures after 72 hours became negative in 91 patients receiving rosoxacin compared to 107 out of 109 patients receiving 2 gm spectinomycin single dose intramuscular. These patients had PPNG and non-PPNG strains in almost equal numbers. Walsch et al<sup>12</sup> compared the efficacy of rosoxacin and penicillin in the treatment of uncomplicated gonorrhoea for assessment of cure rate and development of PGU and found 93% cure rate and 33% PGU with rosoxacin compared to 97% cure rate and 30% PGU with penicillin 2 mega units. In vitro, 90% were inhibited by 0.03 mg/L in the above isolates.

In our study, the symptoms subsided within 12-24 hours. Except slight headache and nausea in 3 patients no other side effect was noticed. The cure rate was 92.86% and the incidence of PGU was 14.3%. In most of the patients who got cured the discharge subsided in 12-24 hours. In four patients, the discharge became scanty but persisted and was associated with slight burning during micturition. These patients on microscopy showed plenty of pus cells but no organisms and culture for gonococcus was negative. These patients were declared PGU cases and were treated with tetracycline. In two patients the discharge reduced markedly on the 2nd day, but gradually increased to the original severity in 5-7 days. Smear showed Gram negative intra-cellular diplococci and the culture was positive. These were the cases who did not respond to treatment.

### References

1. Seth AD : Sensitivity of GC to penicillin compared with that of penicillin, cefuroxime and tetracycline. *Antimicrob Chemotherap*, 1981; 17 : 331-334.

2. Thayer JD, Field FW, Magnuson HJ et al : Sensitivity of gonococci to penicillin and its relation to treatment failures, *Antibiot Chemotherap*, 1957; 7 : 306-310.
3. Curtis FR and Wilkinson AE : A comparison of in vitro sensitivity of gonococci to penicillin with the results of treatment, *Brit J Vener Dis*, 1958; 34 : 70-82.
4. Vijayalakshmi K, Gopalan KN, Gopalkrishnan B et al : First case of B-lactamase strains, *Ind J Sex Trans Dis*, 1982; 3 : 13-14.
5. Rao KB, Tajaka PA, Prasad ASV et al : Incidence of penicillin insensitive and B-lactamase producing strains of *N. gonorrhoeae* in Vishakhapatnam, *Ind J Med Assoc*, 1984; 82 : 115-118.
6. Sowmini CN : Penicillinase producing *N. gonorrhoeae* infection, *Ind J Sex Trans Dis*, 1981; 2: 39-41.
7. Bhushan Kumar, Meera Sharma et al : Comparative trial of ampicillin and ampicillin with probenecid in uncomplicated acute gonococcal urethritis, 1984; 5 : 40-42.
8. Ashford WA, Golash RG and Heming VG : Penicillinase producing *N. gonorrhoeae*, *Lancet*, 1976; ii : 657-658.
9. Phillips I : Beta lactamase-producing penicillin-resistant gonococcus, *Lancet*, 1976; ii : 656-657.
10. Centre for disease control : Spectinomycin-resistant penicillinase-producing *N. gonorrhoeae*, *Morbidity and Mortality Weekly Report*, 1981; 30 : 221-222.
11. Warren CA, Shannon KP and Phillip I : In vitro antigonococcal activity of rosoxacin, *Brit J Vener Dis*, 1981; 57 : 33-35.
12. Walsh RJ, Scott R and Bittiner JB et al : Acrosoxacin in the treatment of uncomplicated gonorrhoea, *Brit J Vener Dis*, 1983; 59 : 242-244.
13. Calubiran OV, Crisologo-vizconde LB and Tupasi TE et al : Treatment of uncomplicated gonorrhoea in women, *Brit J Vener Dis*, 1982; 58 : 231-235.
14. Romanowski B, Austin TW and Pattison FLM : Rosoxacin in therapy of uncomplicated gonorrhoea, *Antimicrob Agents Chemotherap*, 1984; 25 : 455-457.
15. Panika butra K, Ariyarit C et al : Rosoxacin in the treatment of uncomplicated gonorrhoea in men, *Brit J Vener Dis*, 1984; 60 : 231-234.
16. Lim KB, Raja VS, Gram YC et al : Treatment of uncomplicated gonorrhoea with rosoxacin (acrosoxacin), *Brit J Vener Dis*, 1984; 60 : 157-160.
17. Limson BM and Macasaet RK : Rosoxacin (WIN 35, 213) a new antigonococcal agent : double-blind study of three dose regimens, *Phil J Int Med*, 1979; 17 : 123-127.
18. Dickgiesser N and Kuntz P : Activity of rosoxacin, fosfomycin, cefotiam, spectinomycin on B-lactamase producing *Neisseria gonorrhoeae*, *Brit J Vener Dis*, 1984; 60 : 154-156.
19. Thornsberry C, Jaffe J, Brown ST et al : Spectinomycin-resistant *N. gonorrhoeae*, *JAMA*, 1977; 237 : 2405-2406.