Antimicrobial susceptibility of *Neisseria gonorrhoeae* in Pune from 1996 to 2007

Sir,

Gonorrhea is one of the most common sexually transmitted infections (STIs) in developing countries. The prevalence of gonorrhea in males aged between 15 and 49 years was estimated to be 1% in South and Southeast Asia.[1] Control of gonococcal infection is a difficult and a complex issue due to emergence of strains resistant to different antibiotics. Recent studies have revealed a high level of resistance against several antimicrobial agents, such as penicillin, tetracycline, and quinolones in different countries, including India, [2,3] resulting in increasing challenges in the management of gonorrhea. Periodic monitoring for antimicrobial resistance against *Neisseria gonorrhoeae* provides essential information for updating local treatment guidelines. Therefore, the ongoing surveillance for antimicrobial resistance against *N. gonorrhoeae* is a public health strategy to detect its emergence and extent of spread and also to formulate national treatment guidelines for gonorrhea.

The present study describes the variation in antibiotic susceptibility pattern of 296 *N. gonorrhoeae* strains isolated from patients attending four sexually transmitted disease clinics from January 1996 to December 2007 as a part of ongoing long-term surveillance conducted at the National AIDS Research Institute in Pune city in India. Isolation, identification, and antibiotic susceptibility testing was performed as per standard guidelines. [4,5]

Overall, increase in resistance for all antibiotics overtime, was recorded. Penicillin resistance showed an increasing trend from 13% in 1996 to 100% in 2007 and was found to be significant ($P < 0.01$). Ciprofloxacin resistance increased 72% in 1996 to 100% in 2007 and no significant trend was observed. The prevalence of plasmid-mediated penicillin-resistant gonococci strains increased significantly from 4% in 1996 to 25% in 2004 ($P < 0.05$). The MIC 90 values of the resistant isolates are shown in Figure 1. The ciprofloxacin MIC_{90} (64 mg/L) for the isolates in 2007 was higher the isolates obtained in 1996 [MIC_{90} (4 mg/L)]. All isolates were susceptible to ceftriaxone and spectinomycin except two obtained in 2005, which showed reduced susceptibility to ceftriaxone. No difference was observed in the antibiotic susceptibility pattern in *N. gonorrhoeae* strains isolated from HIV-positive and HIV-negative individuals.

The study has the limitation of smaller number of isolates in the later years (2002–2007). The number of gonorrhea patients seen in the clinics drastically reduced overtime, which may be due to increased awareness or widespread use of syndromic management of the STD cases.

Antimicrobial susceptibility of *N. gonorrhoeae* isolated in Pune during the past decade was characterized by high rates of resistance to penicillin and ciprofloxacin. Cefixime is the first-line drug recommended under syndromic management of STIs according to the recent NACO guidelines for treatment of gonorrhea.[6] However, emergence of less susceptible strains to ceftriaxone[3] and cefixime have been reported from WHO regional and reference center Delhi (Personal communication) which highlights the importance of routine monitoring antibiotic resistance. Results of the study support the current recommendations of NACO for use of third-generation as the first choice drugs for the empirical treatment of gonorrhea in India.

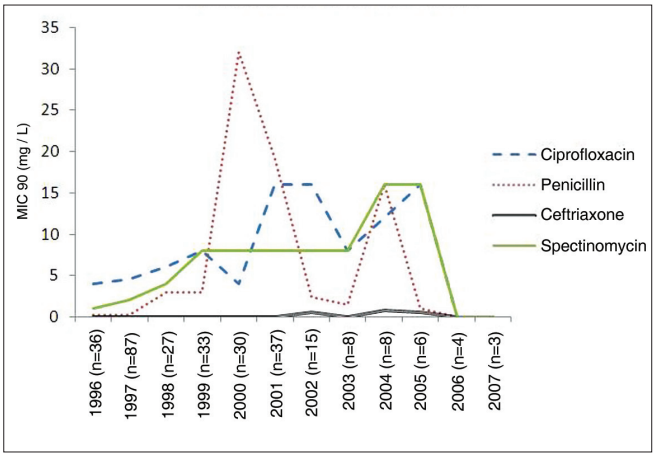

Figure 1: Year wise trend in the values of MIC90 for Penicillin, Ciprofloxacin, Ceftriaxone and Spectinomycin (1996-2007)

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REFERENCES

1. Gerbase AC, Rowley JT, Heymann DH, Berkley SF, Piot P. Global prevalence and incidence estimates of selected curable STDs. Sex Transom Infect 1998;74:S12-6.
2. Ray K, Bala M, Kumari S, Narain JP. Antimicrobial resistance of *Neisseria gonorrhoeae* in selected World Health Organization Southeast Asia Region countries" an overview. Sex Transm Dis 2005;32:178-84.
3. Bala M, Ray K, Gupta SM, Muralidhar S, Jain RK. Changing trends of antimicrobial susceptibility patterns of *Neisseria gonorrhoeae* in India and the emergence of ceftriaxone less susceptible *N. gonorrhoeae* strains. J Antimicrob Chemother 2007; 60:582-6.
4. World Health Organization. Laboratory Diagnosis of Gonorrhoea. WHO Regional Publication, SouthEast Asia series no. 33. Geneva: World Health Organization; 1999. Available from: http://whoseea.org/book33/.
5. Clinical Laboratory Standard Institute. Performance standards for antimicrobial susceptibility testing, Sixteenth informational supplement. 2006; 26:60.
6. National AIDS Control Organization. National Guidelines on Prevention, Management and Control of RTI including STI. National AIDS Control Organization, Government of India. 2007. p. 25.

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