

## LABORATORY DIAGNOSIS OF NEISSERIA GONORRHOEAE WITH SPECIAL REFERENCE TO BETA-LACTAMASE PRODUCING STRAINS

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Sixty untreated patients of gonorrhoea were subjected to clinico-bacteriological study with special reference to beta-lactamase producing strains. Unilateral epididymitis was observed in 2 and multiple peri-urethral abscesses were found in 1. One male patient was asymptomatic. One strain of gonococcus isolated from an unmarried male patient showed resistance to 10 IU penicillin disc and positive rapid iodometric test for beta-lactamase enzyme.

**Key words :** *Neisseria gonorrhoeae*, Beta-lactamase strains, Laboratory diagnosis.

Gonococcal urethritis forms one of the major venereal diseases.<sup>1</sup> Penicillin still continues to be the treatment of choice, though in some parts of the world, emergence of penicillinase (beta-lactamase) producing *Neisseria gonorrhoeae* (PPNG) has been observed.<sup>2</sup> Hence, laboratory facilities should include testing in vitro susceptibility of gonococci to penicillin and presence of PPNG strains.

### Materials and Methods

Sixty consecutive patients having profuse, purulent/muco-purulent discharge, burning and/or frequency of micturition and their immediate sexual consorts with or without symptoms were included for investigations. Details of sexual intercourse—marital and/or extra-marital, casual and promiscuity were recorded.

Smears and cultures were primarily made from the urethral discharge/urethral scrapings in males, and the urethra, cervix uteri, vagina and rectal mucosa in the females.

Culture was done on the modified Thayer-Martin's medium.<sup>3</sup> Strips of filter paper

soaked in 1 percent solution of tetramethyl-paraphenylene diamino-hydrochloride were used for the oxidase test.<sup>4</sup> Rapid sugar fermentation tests were undertaken using solutions of glucose, maltose, fructose and lactose respectively.<sup>5</sup> In vitro sensitivity of gonococci towards penicillin G was performed using 10 IU/disc of penicillin.<sup>6</sup> Rapid iodometric test was used for the demonstration of  $\beta$ -lactamase enzyme.<sup>7</sup>

### Results

The overall incidence of gonorrhoea amongst new STD patients during the period of study was 10.8 percent. A large majority (73.7%) of male patients were unmarried. However, all the 3 female patients in the study group were married and contracted the disease from their husbands.

Majority (86.1%) of the male patients contracted the infection from prostitutes with an exception of a homosexual male who was the active partner.

Painful erection of penis due to multiple peri-urethral abscesses was observed in one patient. Unilateral epididymitis was present in 2 patients. One each male and female patients were asymptomatic.

Of the 57 male patients, smear was positive in 56 and culture in 54 patients. One smear negative patient was positive on culture. In

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all the three female patients, smear was negative while the culture was positive.

In vitro sensitivity showed only one strain to be absolutely resistant to penicillin and this strain was positive for the production of beta-lactamase enzyme.

### Comments

The importance of the preceding observations gets magnified in the light of the not too infrequent emergence of penicillinase (beta-lactamase) producing *Neisseria gonorrhoeae*. Hence, as a corollary, such subjects should be investigated further for the same. We had only one patient suggestive of such a situation where a penicillinase producing gonococcal strain was established through its resistance to the 10 IU/disc of penicillin and the positive rapid iodometric test. Our patient was an unmarried local resident of Delhi and there was no history of visit abroad/other towns in India. The source of infection in him was a local prostitute. All efforts to trace her proved unrewarding.

PPNG strains have also been documented from Madras,<sup>3</sup> Varanasi,<sup>9</sup> Bombay,<sup>10</sup> Kerala<sup>11</sup> and recently from Chandigarh.<sup>12</sup>

In view of the increasing volume of air travel and limited surveillance of beta strains to-date, we must view them as a real or potential problem. Hence, the need for reinforcing the laboratory diagnosis of gonorrhoea with special reference to beta strains.

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