

Penicillinase Activity of *Staphylococcus* sp. Associated with *Neisseria gonorrhoeae* Infections

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OBJECTIVE: To determine the frequency of penicillinase producing *Staphylococcus* sp. found in association with gonococcal urethritis.

BACKGROUND: Penicillin is still the drug of choice for the treatment of gonorrhea in Thailand. Treatment failures or disease recurrences continue to appear, however, when up to 4.8 mega units of penicillin G are administered as is reported elsewhere in this report. While the reasons for such treatment failures probably include impaired antibiotic absorption and the emergence of resistant *N. gonorrhoeae*, the possible presence of antibiotic neutralizing substances in close association with the infection should also be considered. In view of the widespread use of non-prescribed penicillin in this part of the world, we became especially concerned with penicillin neutralizing enzymes (penicillinase) produced by some mutants of staphylococci.

DESCRIPTION: *Staphylococcus* sp. were obtained from blood agar plates inoculated with urethral exudate of male patients seen at a venereal disease clinic. Patients were diagnosed as positive for *N. gonorrhoeae* when intracellular gram negative diplococci were observed in smears of urethral exudate. Penicillinase activity was determined by the methods of Workman and Farrar(1) after the isolates had been identified by biochemical means.

RESULTS: Of the 104 isolates of *Staphylococcus* sp. isolated from 79 cases of gonorrhea and from 25 cases of non-gonococcal urethritis, 82 (78.8%) were found to be producers of penicillinase. Table 1 presents this data.

DISCUSSION: The collection of additional data is continuing. Experiments with mixed cultures of *N. gonorrhoeae* and penicillinase producing *Staphylococcus* sp. are being conducted to determine alterations in penicillin minimum inhibitory concentrations. Additional studies involving *in vivo* testing of such enzymes in rabbits are being undertaken.

Table 1.
Penicillinase Producing *Staphylococcus*
in Male Urethritis

<i>Staphylococcus</i> spp.	Gonococcal Urethritis	Non gonococcal Urethritis
Penicillinase positive	64	18
Penicillinase negative	15	7

REFERENCE:

1. Workman, R.G. and Farrar, W.E., Jr.: Activity of Penicillinase in *Staphylococcus aureus* as studied by the Iodometric method: J. Inf. Dis: 121, April 4, 1970.