

Serum Antibiotic Levels Associated With Gonorrhea In Females

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OBJECTIVE: To determine the relationship between serum antibiotic levels and frequency of Neisseria gonorrhoeae infections among patients.

BACKGROUND: In the SEATO Medical Research Laboratory Annual Report from April 1970—March 1971, a report was made regarding the isolation of Neisseria gonorrhoeae from females. Included in this report were data regarding serum antibiotics in samples obtained from these promiscuous females. By using tube dilution techniques on sera from 56 randomly selected females, we observed that one half of these subjects had serum antimicrobial activity. Twenty three of the 56 subjects (41%) had proven N. gonorrhoeae infections. Of these 23, 17 had serum antimicrobial activity and 6 had no serum antimicrobial activity. These data appeared to indicate that patients taking non-prescribed drugs were more susceptible to gonorrhea than those without measureable serum antibiotics.

After those preliminary findings this laboratory proposed a study of the affect of clandestine use of non-prescribed antibiotics among promiscuous females. In this country patients can obtain antibiotics without prescriptions from physicians, and it is common for patients to treat themselves without ever seeking medical advice. Upon questioning these females we discovered that the regimen of medication was usually quite naive with patients reporting taking "one red pill a day" or "one shot that hurt a lot."

DESCRIPTION: Subjects for this study were selected at the VD Control Clinic on Monday, Wednesday, and Thursday from 0830—1130 hours for 1 week and on the same days from 1300—1500 hours in the following week. Every fifth subject presenting for examination was selected for inclusion in this investigation. Subjects came from two groups. One group included females presenting with symptoms and/or complaints of gonorrhea and the other consisted of females with no complaints but presenting for periodic examination. Our study combined these two groups. The subject was asked to complete a questionnaire regarding her place of work, her age, and the length of time that she had been working in her profession.

All subjects received pelvic examinations and cervical specimens were obtained for bacteriological studies. Ten ml. of venous blood was obtained. Routine bacteriological examination was conducted on cervical specimens to identify N. gonorrhoeae. Sera was tested by tube dilution techniques against Staphylococcus aureus (ATCC 6538P), Bacillus cereus (ATCC 11778), and Sarcina lutea to determine antimicrobial activity. While these biological assays could not determine the presence of specific antibiotics, they did permit positive indication of serum antimicrobial activity. The test organisms were routinely tested against known serum with no antibiotics to ensure their lack of sensitivity to normal serum proteins.

RESULTS: Five hundred and one specimens from 501 subjects were examined. Table 1 indicates the findings in this study. 176 subjects had bacteriological evidence of gonorrhea infections. 325 of the subjects had no bacteriological evidence of gonorrhea infections. Correlation between gram strains taken at the examinations and cultures was good. 114 of these subjects (22.8%) had serum antibiotic cultures that were measured with our techniques while 387 of the subjects had no indication of serum antibiotic levels.

There was no significant difference, by Chi square test, between those patients with infection and serum antimicrobial activity and those with infection and no serum antimicrobial activity. ($X^2 = 1.030$, $df = 1$, $0.50 > p > 0.30$)

While we had previously suspected that the clandestine use of non-prescribed antibiotics might result in less competition from the normal vaginal flora to N. gonorrhoeae and thus make the patient taking these drugs more susceptible to such infections, these findings fail to support that thesis. However, it should be noted that the non-directed use of such drugs apparently does not protect the female from infection with N. gonorrhoeae.

Table 1.
Comparison between N. gonorrhoeae infected females and serum antimicrobial activity

| | | Bacteriological evidence of gonorrhea | |
|------------------------------|-----|---------------------------------------|-----|
| | | Yes | No |
| Serum antimicrobial activity | Yes | 35 | 79 |
| | No | 141 | 246 |