

SENSITIVITY OF THE C-TEST FOR THE DIAGNOSIS OF
GONORRHOEAE FROM SPECIMENS SENT FROM
THAILAND

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OBJECTIVES : To determine the clinical applicability of the C-test, a method of detecting gonococcal DNA, in Thailand.

BACKGROUND : The C-test is a transformation test designed to detect gonococcal DNA in clinical specimens (1). A recent study demonstrated that the C-test is as specific and sensitive as the culture method for the laboratory diagnosis of gonorrhoeae (2). In that study, duplicate specimens were collected at an Atlanta, Georgia clinic. One was immediately used in routine culturing for isolation of gonococci. The other was mailed to our laboratory in Philadelphia, Pennsylvania for C-testing. The specimens were between two days (sent by express mail) and five days (sent by regular mail) old before being C-tested. The objective of the study being reported here was to determine whether the C-test is reliable for the laboratory diagnosis of gonorrhoeae from specimens 10-14 days old, sent from a distance as far as Bangkok, Thailand.

METHODS :

Collecting and processing clinical specimens : Using sterile cotton swabs, two samples of urethral discharge were taken from each of 37 men and four samples of endocervical mucous were taken from each of 159 women at the Cholburi clinic, Thailand. The first urethral and cervical specimens taken were reserved for C-testing. The second urethral swab was used for gram staining and culturing at the Cholburi clinic. A duplicate set of inoculated culture plates from the same swab was sent to the bacteriology laboratory of the Armed Forces Research Institute of Medical Sciences (AFRIMS) in Bangkok. The plates were put into a candle extinction jar which was kept at ambient temperature (30°-34° C) during the 2 hour trip to the AFRIMS laboratory. The second and third cervical swabs were used for gram staining and culturing at the Cholburi clinic. The fourth was used to inoculate culture media destined to be sent to the AFRIMS laboratory.

The swabs for C-testing were each placed into half of a self-seal syringe envelope (Chieftan, American Hospital Supply, Evanston, Ill.). The envelopes

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were numbered 1 through 196. The only other identification mark was the letter "U" to denote urethral, or "C" to denote cervical. The envelopes containing the swabs were kept in a refrigerator until all of the specimens intended for this study were collected. The specimens were collected April 20 through April 24, 1981. They were then sent to Philadelphia via first class mail. The specimens were not refrigerated or handled in any special manner during the journey. They arrived at Temple University School of Medicine on May 4th (10-14 days after the specimen collection). One hundred and thirty were C-tested upon arrival. The remaining 66 were left at room temperature and were C-tested the following day. Those C-tested on either day were chosen at random.

Laboratory techniques

Culture and identification methods : The swabs with the specimens were inoculated onto Thayer-Martin chocolate agar plates in the form of a "Z" pattern which was then cross-streaked with a loop. Inoculated plates were put into candle extinction jars for incubation (36°C, 48 hrs.) at Cholburi clinic and duplicates were sent to the AFRIMS laboratory for incubation.

Colonies typical of gonococci which were oxidase-positive and consisted of gram-negative diplococci were presumed to be *Neisseria gonorrhoeae*. Such isolates were confirmed as being *N. gonorrhoeae* by routine sugar tests. Specimens were also smeared on slides, gram stained, and examined microscopically. Gram-negative diplococci typical of gonococci were considered to be *N. gonorrhoeae*.

C-testing : The C-test on the urethral and cervical specimens was conducted essentially as previously reported (1). Desoxyribonucleic acids eluted from swabs were tested for their ability to transform a *N. gonorrhoeae* temperature sensitive mutant and confer their ability to grow at 37°C. A difference was the use of the test strain TSA-2 instead of TSA-1. TSA-2 is a derivative of TSA-1, but it is a more sensitive test strain.

RESULTS : The urethral specimens from 37 men and the cervical specimens from 159 women were studied. The results of the culture method and of the C-test for determining gonorrhoeae are shown in Table 1.

There was 100 percent concordance with the urethral specimens between the C-test and the combined culture results from the Cholburi Venereal Disease and the AFRIMS laboratories. Two specimens which were transported to Bangkok from Cholburi were negative for gonococci in the AFRIMS laboratory, but were positive in the C-test and contained *N. gonorrhoeae* when specimens were cultured within one hour of collection at the Cholburi Venereal Disease Clinic laboratory.

With regard to the cervical specimens there were ten from which *N. gonorrhoeae* were isolated but which were negative in the C-test and two failed to grow the organism, but the C-test was positive. Thus the C-test identified 31 of 41 (76%) cervical swabs that were positive by culture, therefore the sensitivity of the C-test based on the culture results was 76%. An additional two were negative on culture but were positive by the C-test.

PLAN :

1. An additional 200 cervical specimens will be studied with swabs emersed in sodium azide in an attempt to improve the results of these tests.

Table 1. Results from culturing and C-testing specimens for *N. gonorrhoeae* colonies and gonococcal DNA, respectively

C-test	<u>Culture</u>			
	<u>Urethral</u>		<u>Cervical</u>	
	+	-	+	-
+	31	0	31	2
-	0	6	10	115

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