Recent micturition does not affect the detection of urethral gonorrhoea

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SUMMARY In 202 men with urethral gonorrhoea (176 symptomatic and 26 asymptomatic) who had modified Thayer-Martin cultures taken before and within five minutes after micturition there was complete agreement between results of the two cultures. Micturition did, however, temporarily eliminate the discharge in 100 (56.8%) and make interpretation of Gram-stained smears more laborious.

Introduction

It has been suggested that men who suspect they have gonorrhoea should not micturate for a period of time before urethral specimens for cultures and/or Gram stains are collected. A minimum period of time has never been determined and in many clinics patients are merely advised to avoid micturating until the examination and investigation are completed. However, there is no evidence that micturition washes away enough gonococci to give false negative results to modified Thayer-Martin (MTM) (Center for Disease Control, 1974) culture or Gram-stained smear.

We, therefore, studied the effect of micturition on the quantity and quality of the urethral discharge, and on the detection of urethral gonococci by both MTM medium and Gram-staining techniques.

Materials and methods

SYMPTOMATIC URETHRAL GONORRHOEA

From 22 July to 6 October 1976, 176 men (45.5% White, 42.6% Black, 11.9% Hispano) with Gram-stain positive urethral discharges were enrolled in the study.

The quantity of discharge was estimated by the clinician as:

Profuse —discharge dripping spontaneously from the urethral meatus

Moderate—meatal discharge readily apparent on

physical inspection but not dripping spontaneously

Scanty —meatal discharge only visible after urethral massage.

The quality was also noted as purulent, white, or clear. An intraurethral calcium-alginate swab specimen (U-1) was then inserted 1-2 cm into the urethra and immediately streaked on MTM medium. The patient was asked when he had last passed urine and then was requested to void completely into the lavatory. In the case of the last 51 patients the volume of urine was measured. Within five minutes of voiding, the clinician again estimated the quantity and quality of any remaining discharge and took a second urethral swab (U-2) in the same manner as the first. A Gram stain was then taken on each of the last 51 patients by passing a slide over the external meatus. This Gram stain was read by a different technician from the one who read the initial one. Reading was limited to three minutes a slide, and results were confirmed by a second technician.

MTM medium was immediately placed in an incubator at 36°C containing 5 to 10% carbon dioxide. Isolates were identified after 48 hours' incubation by oxidase reaction and Gram stain.

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Twenty-six men returning for treatment of asymptomatic urethral gonorrhoea found by culture taken two or three days earlier still reported no dysuria or discharge and had no discharge on genital examination, even after urethral massage. The procedure described above was repeated for these men, except that no estimation of quantity and quality of discharge could be made and no smears for Gram staining were taken.

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Results

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The median duration of discharge was two days (range: 4 hours to 21 days) and the median time from last micturition to the initial genital examination was 2 hours (range: 15 minutes to 16 hours). For the last 51 patients, the mean urine volume was 122.1 ml (range: 25 to 350 ml). Table 1 presents the

Table 1 Characteristics of gonococcal urethral exudates in 176 men before and after micturition

Quantity and quality of discharge	Before micturition		After micturition	
	No.	%	No.	%
Profuse purulent	71	40.3	1	0.6
Moderate purulent	48	27.3	6	3.4
Scant purulent	14	8.0	6	3.4
Profuse white	5	2.8	8	4.6
Moderate white	17	9.7	25	14.2
Scant white	12	6.8	21	11.9
Profuse clear	2	1.1	0	0.0
Moderate clear	3	1.7	3	1.7
Scant clear	4	2.3	6	3.4
No discharge	0	0.0	100	56.8

effect that complete voiding had on the quantity and quality of 176 urethral discharges which were re-evaluated within five minutes. Table 2 shows that there was agreement between the results of cultures taken before and after micturition. Of 51 Gram stains taken after micturition, 47 still revealed typical intracellular Gram-negative diplococci, while four contained only extracellular Gram-negative diplococci.

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In the 26 men with asymptomatic infection, complete agreement between results of pre- and post-micturition cultures was again obtained (Table 2).

Table 2 Agreement between urethral cultures taken before and after micturition

Type of urethral gonorrhoea	U-1 Positive/U-2 Positive		U-1 Negative/U-2 Negative	
	No.	%	No.	%
Gram stain positive Symptomatic (N = 176)	168	(95.5)	8	(4.5)
Asymptomatic (N = 26)	15	(57.7)	11	(42.3)

Comment

The control of gonorrhoea depends to a large extent on the sensitivity of available diagnostic tests—that is, our ability to detect infection when present and to

exclude it when absent. It is, therefore, important to know if normal micturition washes away enough gonococci and neutrophils temporarily to eliminate the discharge and to give false negative results to cultures and Gram-stained smears of urethral exudates.

Micturition had the expected clearing effect on discharges (Table 1). Thus, 67.7% of pre-urination discharges but only 4.0% of post-urination discharges were described as moderate or profuse/purulent. No discernible discharge remained in 56.8%, but it may be assumed that urethral discharges regenerate rapidly since the median time reported between micturition before attending the clinic and the initial examination was just two hours.

Cultures taken within five minutes of voiding should show the maximum effect of micturition on the detection of urethral gonococci. None the less, we found complete agreement between pre- and post-voiding MTM cultures in both symptomatic and asymptomatic infection, indicating that this technique is sufficiently sensitive to detect the smaller numbers of gonococci which are left behind.

The sensitivity of MTM medium has never been one hundred per cent (Schmale *et al.*, 1969; Dans and Judson, 1975), so it is not surprising that in eight of 176 patients in whom exudates revealed typical intracellular Gram-negative diplococci, no gonococci were recovered from either pre- or post-voiding MTM cultures. There are several potential factors affecting this insensitivity. Firstly, gonococci seen in Gram stains may not be viable as a result of self-medication or the development of an effective immune response; secondly, MTM medium in general (Dars and Judson, 1975), and the vancomycin component in particular (Cross *et al.*, 1971; Bronson *et al.*, 1973), may be toxic to certain gonococcal strains. Thirdly, the inoculum of viable gonococci from both pre- and post-voiding specimens may occasionally be too small. The first and third factors may explain the negative MTM cultures in the 11 asymptomatic patients who were known to have had positive urethral cultures taken at a visit to the clinic three to seven days earlier.

Post-voiding Gram stains of direct external meatal smears were certainly more difficult to interpret than initial smears. The stained material was often diluted with urine. Despite this, our technicians were able to identify typical intracellular Gram-negative diplococci on 47 of 51 post-voiding smears.

Physicians should be aware that micturition can clear a gonococcal urethral discharge for a short period of time and can make the accurate interpretation of a meatal Gram-stained smear more difficult. It should not, however, impair the ability of a well performed MTM culture to detect gonorrhoea.

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