*British Journal of Venereal Diseases*, 1978, **54**, 128–129

# Evaluation of the early morning smear investigation

P. D. SIMMONS

*From the Department of Genital Medicine, St Bartholomew's Hospital, London*

SUMMARY A retrospective study on early morning smears confirmed the value of this investigation for diagnosing urethritis in men. In 200 patients 108 new infections were diagnosed.

## Introduction

It has long been the practice in clinics for sexually transmitted diseases (STDs) to ask men attending with a complaint of urethral discharge and/or dysuria to hold their urine for several hours before examination. This allows secretions to accumulate for clinical and microbiological examination. It is believed that the longer the interval between micturition and examination, the more accurate are the results. Men may also be asked to return early in the morning holding their urine overnight for further investigation of suspected urethritis (King and Nicol, 1975). Rodin (1971) showed that such early morning examination of apparently healthy men may reveal otherwise undetectable urethritis.

## Method

Two hundred men attending St Bartholomew's Hospital between September 1976 and March 1977, with genitourinary symptoms for whom no firm diagnosis had been made on the first visit, were asked to come for an early morning smear (EMS) and culture. They attended between 8.30 and 9.0 a.m., having micturated just before retiring to bed the previous night. They were advised to restrict their fluid intake from 8.0 p.m. that night. All men were examined in accordance with the method described by Alani *et al.* (1977) with the exception that no *Chlamydia* cultures were taken during the present series. If a change in diagnosis from non-specific urethritis (NSU) to gonorrhoea resulted, or if a patient with no leucocytes on the original Gram-stained smear had more than 10 leucocytes per high power field on 20 fields in the EMS, the outcome was rated as successful. It is not our policy to treat a patient in whom the only abnormality is the presence of threads in the first urine sample passed, as no culture for gonococci is then available.

Address for reprints: P. D. Simmons, Senior Registrar, Department of Genital Medicine, St Bartholomew's Hospital, London EC1

Received for publication 28 October 1977

## Results

The reasons for attendance and other factors were assessed retrospectively in the 200 patients (Table 1). One hundred and eight new infections were diagnosed: five were gonorrhoea and 103 NSU (Table 1). Seventy-eight patients had no sign of urethritis and in 14 patients no further information was obtained; the reasons for requesting these investigations were not obvious.

On the first visit urine had been held for a mean of 2·5 hours, and on the EMS visit for a mean of 9·7 hours. The mean time between the first visit and EMS was 4·6 days. One hundred and thirteen (56%) patients attended for EMS within three days of their first visit and contributed 67 extra diagnoses, 73 patients came between four and 10 days after their first visit, and 14 patients were unable to attend for more than 10 days. The success rate fell from 67% when attendance was within three days to 47% when it was more than three days. Only three (8·6%) of 35 patients complained of urinary symptoms and had an abnormal first glass of urine without an infection being found on EMS (Table 2).

## Discussion

Early morning investigation ensures a period of continence of at least six hours, assuming that the patient does not suffer from nocturia. Many find it easier to hold urine overnight than for a comparable period during the day. Approximately 10% of patients defaulted from their EMS appointments either because of their inability to retain urine for the test or for other reasons. Rodin (1971) found in his series of 88 asymptomatic men investigated by EMS that 11 (12·5%) had NSU. All the infected patients had abnormal first glass urine samples; he did not give details of the urine appearance on first

Table 1 *Results of investigation on 200 men*

| *Reason for request* | *No. of patients* | *Diagnosis* | | | | | |
|---|---|---|---|---|---|---|---|
| | | *Gonorrhoea* | | *NSU* | | *No infection* | |
| | | *No.* | % | *No.* | % | *No.* | % |
| Complaint of urethral discharge | 56 | — | — | 37 | (66·1) | 19 | (33·9) |
| Dysuria | 32 | 1 | (3·1) | 19 | (59·4) | 12 | (37·5) |
| Requested check-up | 15 | — | — | 5 | (33·3) | 10 | (66·7) |
| Reason not obvious | 15 | — | — | 1 | (6·7) | * | — |
| Possible gonorrhoea† | 12 | 4 | (33·3) | 6 | (50) | 2 | (16·7) |
| Urinary threads/specks | 20 | — | — | 17 | (85) | 3 | (15) |
| Penile irritation/pain | 19 | — | — | 7 | (37·8) | 12 | (62·2) |
| Vague symptoms | 9 | — | — | 3 | (33·3) | 6 | (66·7) |
| Frequency | 6 | — | — | — | — | 6 | (100) |
| Loin pain (sterile MSU) | 1 | — | — | — | — | 1 | (100) |
| Previous 'cystitis' | 1 | — | — | 1 | (100) | — | — |
| Possible Reiter's syndrome | 5 | — | — | 2 | (40) | 3 | (60) |
| Trichomoniasis contact | 5 | — | — | 3 | (60) | 2 | (40) |
| NSU contact | 4 | — | — | 2 | (50) | 2 | (50) |
| | 200 | 5 | | 103 | | 78 | |

*No further information from 14
†A diagnosis of gonorrhoea contemplated because of contact's diagnosis, suspicious Gram-stained slide, or time since infection
All percentages relate to number of requests for that reason

Table 2 *Comparison of results between the first and second visit*

| *Patients* | *Findings in first urine at first visit* | | *Urethritis at EMS* | |
|---|---|---|---|---|
| | | | *No.* | % |
| All | Clear | 136 | 67 | (49·3) |
| | Abnormal | 64 | 55 | (85·9) |
| | | | $\chi_1^2=23·1$ | $P<0·001$ |
| Without symptoms | Clear | 34 | 18 | (52·9) |
| | Abnormal | 29 | 23 | (79·3) |
| | | | $\chi_1^2=3·1$ | $P=0·054$ |
| With symptoms | Clear | 102 | 49 | (48·0) |
| | Abnormal | 35 | 32 | (91·4) |
| | | | $\chi_1^2=18·5$ | $P<0·001$ |

attendance. However, Earle (1977) showed that in a small sample of women, the number of leucocytes found per microscopic field was not increased when the patient held her urine for over two hours. Furthermore it has been shown that the isolation of *Chlamydia* from the male urethra seems not to be related to time since micturition (Oriel *et al.*, 1972), but until routine *Chlamydia* culture is undertaken at all clinics and a rapid isolation service provided, physicians will continue to rely on the presence of excess leucocytes to make the diagnosis of NSU. Judson *et al.* (1977) have shown that recent micturition does not affect the detection of urethral gonorrhoea.

The results at this clinic show that patients attending with symptoms and abnormalities in the first glass of urine should be carefully screened for infection with the aid of an EMS investigation. New cases of urethritis will also be found if asymptomatic patients with abnormal urine are screened in this way. The number of patients attending most clinics probably precludes an EMS investigation on all men attending the clinic requesting an examination for STDs. To increase the chances of finding urine abnormalities, we ask all patients at no particular risk for a 'first-catch' early morning urine sample. For those in whom leucocytes are found on centrifugation and microscopical examination of this urine, an EMS investigation is arranged.

I should like to acknowledge the help of Miss Monica Leighton of the Medical Computing and Statistics Unit, St Bartholomew's Hospital.

**References**

Alani, M. D., Darougar, S., Burns, D. C. MacD., Thin, R. N., and Dunn, H. (1977). Isolation of *Chlamydia trachomatis* from the male urethra. *British Journal of Venereal Diseases*, **53**, 88–92.

Earle, J. V. (1977). Significance of leucocytes in smears taken from the female urethral meatus. *British Journal of Venereal Diseases*, **53**, 56–57.

Judson, F. N., Wright, R. A., and Mann, E. A. (1977). Recent micturition does not affect the detection of urethral gonorrhoea. *British Journal of Venereal Diseases*, **53**, 308–310.

King, A., and Nicol, C. S. (1975). *Venereal Diseases*, third edition, p. 261. Ballière Tindall: London.

Oriel, J. D., Reeve, P., Powis, P., Miller, A., and Nicol, C. S. (1972). Chlamydia infection. Isolation of *Chlamdyia* from patients with non-specific genital infection. *British Journal of Venereal Diseases*, **48**, 429–436.

Rodin, P. (1971). Asymptomatic non-specific urethritis. *British Journal of Venereal Diseases*, **47**, 452–453.