

Prevalence of rectal and pharyngeal infection in women with gonorrhoea in Sheffield

G. R. KINGHORN AND S. RASHID

From the Special Clinic, Royal Infirmary, Sheffield

SUMMARY . The prevalence of gonococcal infection of the rectum and pharynx in 239 consecutive women with gonorrhoea presenting as named contacts was 47% and 10% respectively. In 2% of all patients the rectum and pharynx were each the sole sites of infection. Treatment failure occurred in three patients given a single dose of aqueous procaine penicillin 2·4 megaunits intramuscularly, two of whom had rectal infections; no treatment failures occurred in patients with pharyngeal infections.

The incidence of rectal gonorrhoea significantly increased with the duration of infection ($P < 0\cdot001$). This suggests that autoinoculation from infected vaginal material is of major importance in the transmission of gonococcal infection to the rectum.

Introduction

The value of routine sampling of the rectum in women with suspected gonorrhoea attending venereal disease clinics in England was demonstrated by Bhattacharyya and Jephcott (1974). Despite further confirmatory reports (summarised by Klein *et al.*, 1977), routine investigations of rectal secretions in female contacts of men with gonorrhoea are carried out in only 35 (20%) of 173 clinics in England (Adler, 1978). Samples are taken routinely from the pharynx in even fewer clinics.

The present study aims to determine in those women with gonorrhoea who presented as known contacts (1) the prevalence of rectal and pharyngeal infection, and (2) if any relationship exists between the duration of infection and the rectal carriage of *Neisseria gonorrhoeae*.

Patients and methods

The study population consisted of 239 women with gonorrhoea attending this clinic as known contacts of gonorrhoea between 1 October 1977 and 31 September 1978.

SAMPLING

At the first visit swabs for Gram staining and culture were taken from each patient from the urethra,

Address for reprints: Dr G. R. Kinghorn, Special Clinic, Royal Infirmary, Sheffield

Received for publication 18 April 1979

cervix, and rectum and for culture only from the pharynx. If the first tests gave negative results they were repeated 4-6 days later. In most patients specimens from all four sites were again tested during follow up after treatment.

The methods of sampling from each site are summarised by Morton (1977). Rectal specimens were obtained with direct visualisation of the rectum (Bhattacharyya and Jephcott, 1974). The diagnostic criteria and cultural methods used are fully described by Jephcott and Rashid (1978).

TREATMENT

The standard treatment regimen was a single dose of aqueous procaine penicillin 2·4 megaunits i.m. Alternative regimens, given to those who were hypersensitive to penicillin, were spectinomycin 4 g i.m. or kanamycin 2 g i.m. Treatment failure was diagnosed if *N. gonorrhoeae* persisted on Gram-stained smears or culture swabs taken within one week of initial treatment in the absence of any further sexual contact.

DURATION OF INFECTION

The duration of infection, which was assessed from the clinical history, was taken as the number of days since initial contact with the presumed infected primary consort. Variation in the proportion of patients who had rectal infections for differing periods of time was assessed by the χ^2 test using Yates's modification. A 2×2 contingency table was constructed and the result given as one degree of freedom.

Results

Of the total 239 infections, 24 (10%) were diagnosed by Gram stain alone, 42 (18%) by culture alone, and 173 (72%) by both methods. The sites giving a positive result by either method are shown in Table 1. Two hundred and thirty-three (97%) infections gave a positive result by smear or culture or both at the first examination. A presumptive diagnosis of gonorrhoea was made for 184 (77%) infections by positive Gram-stain results from one or more of the three sites; this allowed treatment to be given at the patient's first visit.

Table 1 *Diagnosis of gonorrhoea in 239 infections affecting different sites by Gram-stained smear or culture or both*

Infections giving positive results from									
Cervix	Urethra	Rectum	Pharynx	Total					
No. %	No. %	No. %	No. %	No. %					
217	90.8	179	74.9	113	47.3	24	10	239	100

Gram-stained smears from the cervix and urethra gave more positive results than did those from the rectum (Table 2). However, 39% of all rectal infections gave positive results by Gram stain. In 58 (24%) infections, one site only gave a positive result (Table 3). The rectum or the pharynx were the only sites affected in 2% of all infections.

Two hundred and thirty infections were followed up at least once after treatment. Treatment failed in

Table 2 *Comparison of results by smear and culture of specimens from cervix, urethra, and rectum*

Diagnostic method		Results from					
		Cervix		Urethra		Rectum	
Smear	Culture	No.	%	No.	%	No.	%
+	-	25	11.5	15	8.4	4	3.5
-	+	53	24.4	62	34.6	69	61.1
+	+	139	64.1	102	57	40	35.4
Total		217	100	179	100	113	100

+ Positive - negative

Table 3 *Analysis of infections giving positive results from single site*

Diagnostic method	Positive results				Total
	Cervix	Urethra	Rectum	Pharynx	
Smear alone	12	4			16
Culture alone	11	4	3	4	22
Smear and culture	16	2	2		20
Total	39	10	5	4	58
% of all specimens	16.3	4.2	2.1	1.7	24.3

three of these after penicillin treatment; only one site was affected in each case, the cervix in one and the rectum in two. In all three instances results to cultures taken before and after treatment had been positive. No treatment failures occurred in the case of pharyngeal infections, even though all were treated with single-dose regimens.

The effect of duration of gonococcal infection on rectal carriage of *N. gonorrhoeae* is shown in Table 4. The results show that the frequency of rectal infection significantly increases with the duration of infection ($P < 0.001$).

Table 4 *Effect of duration of infection on incidence of rectal gonorrhoea*

Rectal culture result	Duration of infection (weeks)						Total	
	<1		1-2		>2		No.	%
+	25	24.5	31	51.7	57	74	113	47.3
-	77	75.5	29	48.3	20	26	126	52.7
Total	102	100	60	100	77	100	239	100

+ Positive - negative
Fifty-six (34.6%) of 162 infections of less than two weeks' duration affected the rectum compared with 57 (74%) of 77 infections of over two weeks' duration ($\chi^2 = 31.0$; $P < 0.001$)

Discussion

The overall prevalence of 47% for rectal infections in female contacts with gonorrhoea and of 2% for rectal gonorrhoea alone compare with the mean prevalence rates of 44% and 4% respectively quoted by Klein *et al.* (1977). The finding of two out of three treatment failures for rectal infections alone in this study emphasises the need for routine rectal investigations in both the diagnosis and follow up of infected women.

The major mechanism of rectal infection is not clear. Ødegaard (1972) was unable to demonstrate an increased incidence of gonococcal proctitis with concomitant trichomoniasis. Dans (1975) found no difference in the admitted incidence of rectal intercourse in women with gonorrhoea between those with and those without rectal infection. He stated that peno-anal contact during foreplay was a more likely mechanism. Our finding that the incidence of rectal infection increased with longer duration of infection suggests that autoinoculation by infected vaginal secretions may be the major mechanism.

Pharyngeal gonorrhoea is usually asymptomatic, can be a source of metastatic disease, and may persist with or without treatment (Wiesner, 1975). The incidence of 10% in Sheffield in 1978 is similar to the 10% reported by Brø-Jorgensen and Jensen (1973) in Denmark, 11.3% reported by Ødegaard and Gundersen (1973) in Norway, and 10.3% reported

by Wiesner *et al.* (1975) in the USA. No treatment failures after single-dose regimens were found in this study. This is surprising. Ødegaard and Gundersen (1973) reported a failure rate of 48% of 51 women treated with ampicillin 2 g and probenecid 1 g. Wiesner *et al.* (1975), however, successfully treated 35 out of 36 patients with pharyngeal infections with aqueous procaine penicillin 4·8 megaunits. The low local incidence of gonococcal isolates that show relative resistance to penicillin (Jackson and Jephcott, 1975) may be a factor in our apparent success with a smaller, single dose of penicillin. It should be made clear, however, that most of our patients had a single test-of-cure culture swab taken from the pharynx, which may be unreliable (Brø-Jorgensen and Jensen, 1973).

Both rectal and pharyngeal infections are, therefore, shown to be common in women with gonorrhoea in Sheffield. The findings in this study support those who advocate the importance of performing routine rectal and pharyngeal cultures to establish the diagnosis and cure after treatment in women with suspected gonorrhoea.

We are grateful to the secretarial staff, for the typing of this manuscript, and to Dr R. S. Morton for his helpful guidance.

References

- Adler, M. (1978). Diagnosis, treatment and reporting criteria for gonorrhoea in sexually transmitted disease clinics in England and Wales. 1 Diagnosis. *British Journal of Venereal Diseases*, **54**, 10-14.
- Bhattacharyya, M. N. and Jephcott, A. E. (1974). Diagnosis of gonorrhoea in women; role of the rectal sample. *British Journal of Venereal Diseases*, **50**, 109-112.
- Brø-Jorgensen, A. and Jensen, T. (1973). Gonococcal pharyngeal infections: report of 110 cases. *British Journal of Venereal Diseases*, **49**, 491-499.
- Dans, P. E. (1975). Gonococcal ano-genital infection. *Clinical Obstetrics and Gynaecology*, **18**, 103-119.
- Jackson, D. H. and Jephcott, A. E. (1976). Penicillin sensitivity of gonococci: an evaluation of monitoring as an index of epidemiological control. *British Journal of Venereal Diseases*, **52**, 253-255.
- Jephcott, A. E. and Rashid, S. (1978). Improved management in the diagnosis of gonorrhoea in women. *British Journal of Venereal Diseases*, **54**, 155-159.
- Klein, E. J., Fisher, L. S., Chow, A. W., and Guze, L. B. (1977). Anorectal gonococcal infection. *Annals of Internal Medicine*, **86**, 340-346.
- Morton, R. S. (1977). *Gonorrhoea: Major Problems in Dermatology*. Volume 9, pp. 37-39. Saunders: London.
- Ødegaard, K. (1972). Trichomonas infection and rectal gonorrhoea in women. *Acta Dermatologica-Venereologica*, **52**, 326-328.
- Ødegaard, K. and Gundersen, T. (1973). Gonococcal pharyngeal infection. *British Journal of Venereal Diseases*, **49**, 350-352.
- Wiesner, P. J. (1975). Gonococcal pharyngeal infection. *Clinical Obstetrics and Gynaecology*, **18**, 103-119.
- Wiesner, P. J., Tronca, E., Pedersen, A. H. B., and Holmes, K. K. (1973). Clinical spectrum of pharyngeal gonococcal infection. *New England Journal of Medicine*, **288**, 181-185.