

Male carriage of *Gardnerella vaginalis*

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SUMMARY The prevalence of *Gardnerella vaginalis* in the urethra of 430 men attending a clinic for sexually transmitted disease was 11·4%; it was significantly higher in heterosexuals (14·5%) than in homosexuals (4·5%). There was no evidence of rectal or subpreputial carriage of *G vaginalis*, and urethral carriage was not associated with symptoms of urethritis.

Introduction

There is a close association between *Gardnerella vaginalis* and non-specific vaginitis.¹ The disease can be established in women by the inoculation into the vagina of vaginal material from infected women¹ or by the inoculation of pure cultures of *G vaginalis*.² There is a high urethral carriage rate of gardnerellas among male partners of infected women,^{1,3} and many women whose sexual partners remain untreated become reinfected.¹ These observations suggest that gardnerella-associated vaginitis is a sexually transmitted disease. Little is known, however, about the prevalence of *G vaginalis* in the male population in general and whether it is associated with symptoms.

In this study we have determined the prevalence of urethral carriage of *G vaginalis* in 430 men attending a clinic for sexually transmitted diseases, compared urethral carriage of *G vaginalis* with subpreputial and anorectal carriage, and examined the association between carriage, symptoms of urethritis, and patterns of sexual activity.

Patients and methods

Urethral samples were taken from 430 men attending the Praed Street clinic for sexually transmitted diseases. In addition anorectal samples were taken from 57 of the 430 men and subpreputial samples from 105. Patients were chosen randomly with no attempt at selection on the basis of symptoms. None had received any antimicrobial treatment for at least one month.

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CULTURE

The urethral samples, collected with 1- μ l disposable inoculating loops, were cultured immediately on to human and horse blood (5% v/v) agar in double-chamber Petri dishes. This enabled any haemolysis produced on the two media to be compared directly. Inoculated plates were stored at 36° in 7% CO₂ and transferred to the laboratory within four hours. Anorectal and subpreputial swabs were transported to the laboratory in Amies transport medium, where they were plated on to similar media supplemented with amphotericin B 2 mg/l, gentamicin sulphate 4 mg/l, and nalidixic acid 30 mg/l. All plates were incubated at 36° in 7% CO₂ for 48 hours.

Gardnerella vaginalis were identified as catalase and oxidase Gram-variable rods which produced a pronounced diffuse β -haemolysis on human, but little or no haemolysis on horse, blood agar and which fermented starch maltose and glucose.⁴

Results

Urethral samples were obtained from 430 men; *G vaginalis* was isolated from 49, giving a prevalence of 11·4%. Although quantitative cultures were not performed, a heavy growth of *G vaginalis* was obtained in most cases. The double-chamber Petri dishes showed the differential β -haemolysis on horse and human agar very clearly (figure). There was a significant association between the isolation of *G vaginalis* and the absence of symptoms of urethritis (table I). Subpreputial swabs from 105 men and rectal swabs from 57 showed as gardnerellas at either site, although *G vaginalis* colonised the urethra of 13 and four men in the two groups.

The relationship between carriage of *G vaginalis* and patterns of sexual behaviour is shown in table II. Carriage was significantly higher among heterosexuals (14·5%) than among homosexuals (4·5%).

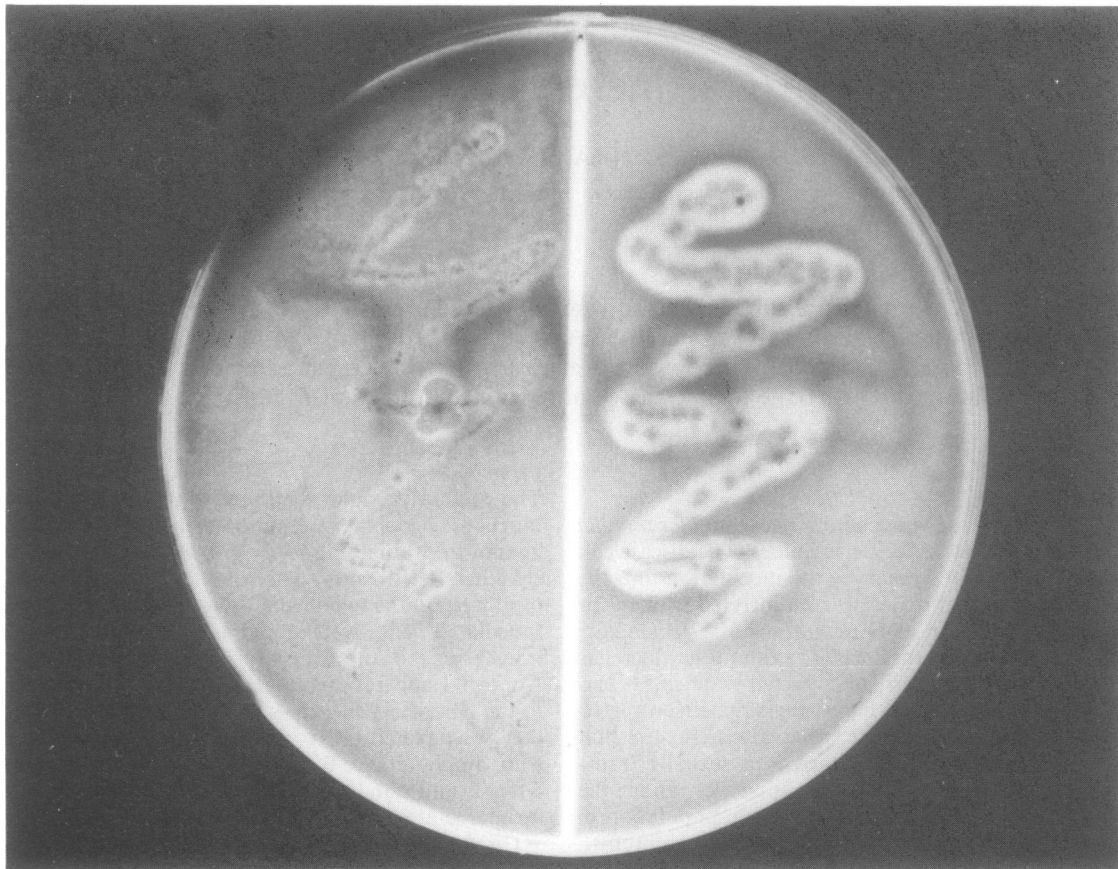


FIGURE Double-chamber Petri dish containing human blood agar on the right and horse blood agar on the left showing differential haemolysis produced by *G vaginalis*.

TABLE I Relationship between symptoms of urethritis and urethral isolation of *G vaginalis*

Symptoms	Culture results for <i>G vaginalis</i> (% of total)	
	Positive	Negative
Present	16 (7.2)*	206
Absent	33 (15.8)*	175

* $\chi^2 = 8.0$; $0.01 < P < 0.001$

TABLE II Urethral carriage of *G vaginalis* in heterosexual, homosexual, and bisexual men

	Culture results for <i>G vaginalis</i> (% of total)	
	Positive	Negative
Heterosexual	42 (14.5)*	246
Homosexual	6 (4.5)*	127
Bisexual	1	8

* $\chi^2 = 9.1$; $0.01 < P < 0.001$

Discussion

Pheifer *et al*³ found *G vaginalis* in the urethra of 27 of 34 male partners of patients with gardnerella-associated vaginitis. Gardner and Dukes¹ found the organism in 45 of 47 sexual contacts of women infected with *G vaginalis*. Impressive though these figures are, neither study included comparable control groups. Our prevalence of 14.5% among an unselected population of sexually active male heterosexuals and the much lower prevalence among homosexuals does, if generally applicable, strongly support the idea of a male reservoir of *G vaginalis* among the partners of infected women. We are now investigating carriage rates of *G vaginalis* in this highly selected group.

The lack of any association between symptoms and urethral carriage of *G vaginalis* suggests that it is not a primary pathogen. Gardner and Dukes¹ showed that the organism could persist in the male urethra

for many months. One case of cystitis apparently caused by *G vaginalis* has been reported.⁵

We found no evidence of rectal carriage of *G vaginalis*, although we have seen this in women. More surprising was our failure to isolate *G vaginalis* from the subpreputial sac, even in those men who were urethral carriers. It is a fastidious organism, and this site may not provide the correct growth conditions for the persistence of *G vaginalis*. Other organisms which colonise the male urethra, such as group B streptococci, can be isolated readily from both the anorectal area and the subpreputial sac.

Anaerobes have been implicated with *G vaginalis* in the pathogenesis of non-specific vaginitis,³ and recently vibrio-like anaerobes have been isolated in such cases.⁶⁻⁸ Fontaine *et al*⁹ isolated curved anaerobic bacilli from men with non-gonococcal urethritis. We are investigating the relationship between gardnerellas and anaerobes in men and women.

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