Gonococcal pharyngeal infection

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Gonococcal infection of the oral cavity is not new. Luys (1921) stated that *blennorrhagie buccale* in newborn babies occurred with relative frequency, together with gonococcal ophthalmia, and that both could cause pronounced symptoms. He stated further that *blennorrhagie buccale* also occurred in adults, but less frequently than rectal gonorrhoea. Janet (1929) stated that he had observed three cases in prostitutes in whom the mouth had been a reservoir for gonococci leading to gonorrhoeal urethritis amongst their clients.

Subsequently, gonococcal infection of the oral cavity and pharynx seems to have been almost forgotten; but with the increased spread of gonorrhoea, especially amongst young people, which is following sexual liberation, reports of this type of gonococcal infection have again begun to appear. This renewed interest coincides with recent improvements in the demonstration of gonococci on selective culture media, and we are now able to confirm what the early venereologists had observed clinically and microscopically.

Schmidt, Hjørtting-Hansen, and Philipsen (1961) reported gonococcal stomatitis in a male patient who had had oro-genital contact with his fiancée who was found to have genital gonorrhoea. Fiumara, Wise, and Many (1967) demonstrated gonorrhoeal pharyngitis in three homosexual males. Thatcher, McCraney Kellogg, and Whaley (1969) found gonococci in the pharynx of one out of 505 asymptomatic men. Hellgren (1971) found gonococcal tonsillitis in one out of thirty males and in one out of twenty females with uro-genital gonorrhoea, all of whom had had oro-genital contact. Bro-Jørgensen and Jensen (1971) in an investigation of unselected consecutive Danish patients with gonorrhoea, demonstrated *N. gonorrhoeae* by culture from tonsillar swabs in six out of 95 men and in six out of 66 women. Holmes, Counts, and Beaty (1971) stated that *N. gonorrhoeae* had been recovered from the oro-pharynx of eighty

persons seen at the Seattle-King County Department of Health. Rodin, Monteiro, and Scrimgeour (1972) reported two cases of pharyngeal gonorrhoea in male homosexuals; in a prospective study there was one positive out of 73 throat swabs taken from homosexuals, 33 of whom had gonorrhoea. Ratnatunga (1972) reported three cases, also in homosexual males. Owen and Hill (1972) found pharyngeal gonorrhoea in eleven of 79 homosexual men.

It has been noted that tonsillar gonococcal infections seem to be very recalcitrant to treatment (Hellgren, 1971; Bro-Jørgensen and Jensen, 1971).

The purpose of the present study was to examine the incidence of gonococcal infections of the pharynx amongst patients attending a V.D. clinic in Oslo.

Material and methods

From January 1 to August 1, 1972, all new patients (1,088 females and 2,396 males) visiting the Department of Venereal Diseases of the Oslo Board of Health were examined for gonococcal infection. During the first visit to the clinic, Gram-stained smears from the urethra and cervix were examined, and specimens were taken for culture from the urethra of all males, and from the urethra, cervix, and rectum of all females. Rectal specimens were also taken from a few males. Specimens were taken from the pharynx of all patients. Gonorrhoea was demonstrated in 1,440 patients (450 females and 990 males).

The samples were taken with charcoal impregnated swabs. In those from the pharynx an effort was made to reach the upper surface of the soft palate, and the swab was then passed downwards over the fauces and tonsils. The swabs were placed in solid Stuart's transport medium and delivered to the laboratory a few hours later. The specimens were then inoculated onto a selective culture medium containing colistin, vancomycin, nystatin, and trimethoprim. Gonococci were identified on the basis of colonial and microscopical appearance, and oxidase and sugar fermentation reactions. The sensitivities of the isolated gonococci to the most commonly used antibacterial agents were tested by the paper disc method.

With few exceptions the patients first received our standard treatment for uncomplicated gonorrhoea: 2 g.

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ampicillin combined with 1g. probenecid in one oral dose (Gundersen, Ødegaard, and Gjessing, 1969).

Results

Table I shows that, among the 1,440 patients with gonorrhoea, gonococci were isolated from the pharynx of 100 (7 per cent.), and that gonococcal infection of the pharynx was demonstrated about twice as often in females (11.3 per cent.) as in males (5 per cent.). In 1.1 per cent. of the patients, gonococci were isolated exclusively from the pharynx.

TABLE I *Isolation of gonococci from the pharynx of patients with gonorrhoea, by sex*

Sex	No. of patients	Isolation of gonococci					
		Pharynx and other sites		Pharynx only		Total	
		No.	Per cent.	No.	Per cent.	No.	Per cent.
Female	450	46	10.2	5	1.1	51	11.3
Male	990	38	3.8	11	1.1	49	5.0
Total	1,440	84	5.8	16	1.1	100	7.0

Of the 100 patients with gonorrhoeal infection of the pharynx, one female and one male did not return for treatment. The results of treatment for the remaining 98 patients are shown in Table II. The 47 per cent. treatment failures were distributed almost equally between males and females.

TABLE II *Results of treatment of 98 patients with gonococcal infection of the pharynx, by sex*

Sex	No. treated	No. followed-up	Failures	
			No.	Per cent.
Female	50	48	23	48
Male	48	46	21	46
Total	98	94	44	47

Of the 23 treatment failures amongst females, nineteen had positive cultures from the pharynx only, three had positive pharyngeal and rectal cultures, and one—probably re-infected—showed uro-genital gonorrhoea in addition to the pharyngeal infection. The male treatment failures had positive cultures from the pharynx only.

Of the treatment failures, three patients did not attend again and five patients were given no further treatment because they subsequently had three successive negative cultures. The others were given various kinds of treatment. Most of them received

a total of 8 to 9 g. oxytetracycline orally, given in divided doses four times a day for 7 to 9 days. A great many patients had to undergo repeated and prolonged courses of treatment before the pharyngeal infection was eradicated, and in the case of one female patient this took 16 weeks.

The sensitivity tests for gonococci isolated from the treatment failures showed that 23 of the 44 strains (52 per cent.) had reduced sensitivity to penicillin G and ampicillin (minimum inhibitory concentration ≥ 0.25 μ g./ml.). During the same period of time, about 25 per cent. of all gonococcal strains isolated from patients in Oslo showed reduced sensitivity to penicillin G and ampicillin. (With the usual paper disc method for sensitivity testing of gonococci, which is comparatively inexact, the sensitivity pattern to ampicillin follows very closely that to penicillin G.)

Unfortunately, not all the patients were questioned concerning oro-genital contact, but many of those asked admitted the practice, although some answered evasively.

Few of the patients complained of throat trouble, and those that did usually had only slight symptoms. One female patient, referred to an ear, nose and throat specialist by her doctor because of pronounced soreness of the throat, suspected that she might have gonorrhoea of the pharynx and instead attended the V.D. clinic of her own accord.

A single negative culture from the pharynx is not highly reliable, in that ten of the 44 failures were negative at the first follow-up test but positive at the second.

Samples were also taken from different locations in the pharynx and oral cavity. In this manner gonococci were cultured from a specimen taken from a well-defined erythematous spot on the tongue, from a sample taken through the nostrils from far back in the nasal cavity and once from saliva which the patient spat directly onto the culture medium.

Discussion

We have isolated *N. gonorrhoeae* from the pharynx in 11.3 per cent. of females and 5 per cent. of males with gonorrhoea. These numbers agree fairly well with the findings of Bro-Jørgensen and Jensen (1971) in Copenhagen, who also reported that the condition was more common in women than men.

In our investigation, infection of the pharynx only was demonstrated in 1.1 per cent. of the total number of patients with gonorrhoea. Some of the eleven men with exclusively pharyngeal gonorrhoea had attended because they were contacts, but had no gonorrhoeal symptoms. These would have been assessed as negative if only the usual sites had been

tested, and would have continued, in all probability, to be sources of infection.

We have also cultured for gonococci 230 throat swabs from patients who were not attending the V.D. clinic. These were sent to the laboratory on charcoal-impregnated swabs in Stuart's transport medium to be examined primarily for the usual pathogenic bacteria in the throat. Gonococci could not be isolated from any of these samples.

It may be difficult to find gonococci in the pharynx and a negative test may be followed by a positive one later. On the whole, it is a little more difficult to isolate gonococci from the pharynx than from the genital region, because unwanted bacterial flora grow more readily in spite of the use of a selective medium. Also the risk of cross-reaction with meningococci means that the fluorescent antibody technique cannot be used for diagnosis.

With our standard treatment of uncomplicated gonorrhoea we have found the failure rate to be 1 to 2 per cent. In contrast, in gonorrhoeal infection of the pharynx the failure rate was 47 per cent. It is therefore evident that pharyngeal infection requires considerably more treatment than uro-genital infection. This conclusion was also reached by Hellgren (1971) and Bro-Jørgensen and Jensen (1971).

It is clear that patients infected in the pharynx with gonococci with reduced sensitivity to penicillin G and ampicillin are very likely to be treatment failures when given a single dose of ampicillin. A preferable treatment for patients with gonococcal pharyngeal infection remains to be found.

It also appears that gonococci sometimes establish themselves on the mucous membrane of the pharynx for only a limited time, and may later disappear without additional treatment.

With pharyngeal infection, a new factor has been added to the epidemiology and standard picture of gonorrhoea. Contacts in whose cases pharyngeal samples are not taken, may be found negative by the usual tests. As suggested by Bro-Jørgensen and Jensen (1971), the transmission of gonococci by kissing is also a possibility. It may also be assumed that disseminated gonococcal infections could have originated from pharyngeal infection when uro-genital and rectal tests have given negative results.

Summary

Among 1,440 consecutive patients with gonorrhoea, gonococci were isolated by culture of specimens from the pharynx in 100 (7 per cent.): 5 per cent. of the males (49 of 990) and 11.3 per cent. of the females (51 of 450).

Gonococci were cultured exclusively from the

pharynx in 1.1 per cent. of the patients. No gonococci could be isolated from 230 pharyngeal samples from patients attending other departments.

Our routine treatment for uncomplicated gonorrhoea (2g. ampicillin plus 1g. probenecid) gives a failure rate of 1 to 2 per cent. In pharyngeal gonococcal infections, on the other hand, the failure rate was 47 per cent.

Gonococcal pharyngeal infection appears to be an added factor to be taken into account in considering the spread of gonorrhoea.

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Infection gonococcique pharyngée

SOMMAIRE

Chez 1.440 malades consécutifs atteints de gonococcie, des gonocoques furent trouvés par culture à partir de prélèvements du pharynx chez 100 (77 pour cent): 5 pour cent d'hommes (49 sur 990) et 11,3 pour cent de femmes (51 sur 450).

Des gonocoques furent obtenus en culture uniquement dans le pharynx chez 1,1 pour cent des malades. Aucun gonocoque ne put être isolé de 230 prélèvements pharyngés chez des malades fréquentant d'autres services.

Notre traitement habituel pour la gonococcie non compliquée (2 g. d'ampicilline + 1 g. de probénécide) échoue dans 1 à 2 pour cent des cas. Par contre, dans les infections gonococciques pharyngées, le taux d'échec fut de 47 pour cent.

L'infection gonococcique pharyngée semble être un facteur supplémentaire à retenir en ce qui concerne l'extension de la gonococcie.