Acta Dermatovener (Stockholm) 57: 173–176, 1977

ISOLATION OF NEISSERIA MENINGITIDIS IN UROGENITAL/RECTAL INFECTIONS

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Abstract. In 9 cases (6 men, 3 women) during 1975 we have isolated *N. meningitidis* from routine samples from urogenital/rectal locations to be examined for gonococci by culture. One of the men harboured meningococci in the rectum, the other 5 in the urethra. Two of the women had meningococci in the cervix and one in the urethra. Of the meningococci isolated, one belonged to serogroup A, 6 to group B and 2 to group C.

Six of the patients, 4 men and 2 women, who attended the Department of Venereal Diseases, are described in greater detail. Of these, only one had symptoms. The meningococci disappeared spontaneously in 5 cases, whilst a man with unsymptomatic infection still harboured meningococci in the rectum after one month. Two of the 4 men were homosexual.

Key words: Neisseria meningitidis; Urogenital/rectal infection

Meningococcal infection of the urogenital tract has been considered uncommon, but in recent years an increasing number of papers concerning such infections have been published (2, 6, 7, 9, 11, 16). At our laboratory we have, since January 1, 1975, been taking note of meningococci in samples cultured for gonococci from urogenital/rectal locations.

The present paper is a report on those cases in which we have demonstrated *N. meningitidis* from these sampling sites.

MATERIAL AND METHODS

At first visits to the clinic of the Department of Venereal Diseases, Gram-stained smears from the urethra in males and from the urethra and cervix in females were examined, and specimens were taken for culture of gonococci from the urethra and pharynx in all males and from the urethra, cervix, rectum and pharynx in all females. Rectal specimens were also taken for culture in a few males.

Samples from patients not attending the V.D. clinic (i.e. from various hospitals and practising physicians) were for the most part taken for culture from the urethra only in men and from the urethra and cervix in women, though occasionally a cervical or a vaginal specimen only was received from women.

The samples for culture arrived at the laboratory on charcoal-impregnated swabs placed in solid Stuart medium. The specimens were inoculated onto a selective culture medium containing colistin, lincomycin, nystatin and trimethoprim (15). Following incubation, gonococci and meningococci were identified on the basis of colony and microscopic appearance, and oxidase and sugar fermentation reactions. The meningococci were distinguished from gonococci by their ability to ferment maltose, to grow on Dubos oleic acid agar medium (5) and to agglutinate in antimeningococcus grouping sera.

RESULTS

During 1975, 90 540 samples were received at this laboratory for examination of gonococci by culture. Gonococci were isolated from 7 045 samples, representing 5 328 patients. Meningococci were isolated from 10 urogenital/rectal samples, representing 9 patients. Of these, 6 patients had attended the V.D. clinic. These 6 cases are described in greater detail.

Case 1

A 23-year-old female attended the clinic because of slight vaginal discharge, itching, pain and frequent urination after coitus one week earlier. Direct microscopic examination of Gram-stained smears gave negative results. Cultures from the urethra, cervix, rectum and pharynx showed no growth of gonococci, but meningococci belonging to serogroup C were cultured from the cervix. The control 14 days later gave no growth of gonococci

or meningococci from genital samples, but this time meningococci were demonstrated by culture from the pharynx. (Unfortunately the culture was lost before serogrouping was effected.) The clinical symptoms disappeared spontaneously.

Conclusion: The meningococci as well as the symptoms disappeared without treatment.

Case 2

A 26-year-old woman was 2½ months previously exposed to gonococcal infection, but gonococci could not be demonstrated. Two months later, however, she was admitted to a surgical department for acute appendicitis but which proved to be gonorrhoeal salpingitis. The patient was treated in hospital with ampicillin and referred to our department for control. She had no clinical symptoms. Cultures from the urethra, cervix, rectum and pharynx showed no growth of gonococci, but meningococci serogroup B were isolated from the urethral sample. Yeast-like fungi were demonstrated from the genital samples. The patient was treated locally with nystatin. From the control specimen one week later, neither gonococci nor meningococci could be cultured from any of the locations.

Conclusion: Symptomless infection with meningococci which disappeared without treatment.

Case 3

A 24-year-old homosexual male attended the clinic because of condylomata accuminata around the anus. Routine examination for gonococci from the urethra, rectum and pharynx gave negative results, but meningococci serogroup B were cultured from the rectum. From the control specimen one month later, the meningococci could still be cultured from the rectum. The patient was treated with podophyllin for his condylomata only. He had no other symptoms.

Conclusion: Symptomless carrier of meningococci in the rectum.

Case 4

A 32-year-old male came to the clinic because of gonorrhoeal discharge from the urethra. He was treated with a combination of ampicillin and probenecid. At the control 2 weeks later, he was free of symptoms, and gonococci could not be demonstrated, but from the urethral sample, meningococci serogroup B were demonstrated by culture. At two further controls, 2 and 3 weeks later, neither gonococci nor meningococci could be demonstrated. The patient's sexual partner was examined, but no meningococci could be demonstrated from any site.

Conclusion: Casual demonstration of meningococci that disappeared without treatment.

Case 5

An 18-year-old male applied to the clinic because of itching, scabies and condylomata accuminata. Routine examination for gonococci was negative, but meningococci belonging to serogroup A were found in the urethral sample. From the pharynx, meningococci serogroup B were demonstrated. The patient had no symptoms, either from the urethra or from the pharynx. However, at the control 14 days later, after admitting new exposure, gonococci (though not meningococci) were demonstrated by culture from the urethra, whilst meningococci serogroup B could still be found in the pharynx. New cultures 3 weeks later showed the same, i.e. gonococci from the urethra and meningococci serogroup B from the pharynx. After treatment with tetracycline, both gonococci and meningococci disappeared.

Conclusion: The meningococci disappeared spontaneously from the urethra and the patient contracted gonococcal urethritis instead.

Case 6

A 25-year-old homosexual male attended the clinic because of a slight balanitis. Routine examination showed no gonococci, but from the urethra and the pharynx, meningococci serogroup B could be demonstrated by culture. Because of these findings, the patient was summoned for control, which he attended 3 months later. At that time, neither gonococci nor meningococci could be found by culture from the urethra, rectum or pharynx. At two further controls, 1 and 4 weeks later, meningococci serogroup B was cultured from the pharynx both times, but not from the urethra or rectum. The patient had no symptoms from the urethra or pharynx and received no treatment.

Conclusion: The meningococci disappeared spontaneously from the urethra.

Three patients did not attend the V.D. clinic. These were 2 men where meningococci serogroup B were isolated from the urethra. There was a total lack of information from one of the men. The other

man, 24 years of age, had symptoms of urethritis. The third patient was an 18-year-old woman. In her case meningococci serogroup C were demonstrated from the cervix. She had no symptoms. Control samples from these 3 patients were not received.

DISCUSSION

In association with disseminated meningococcal disease, *N. meningitidis* has been isolated from the male (12) and the female (11) urogenital tract. There are, however, a fair number of reports of isolations of meningococci from the urogenital/rectal locations without involvement of other organ systems. Carpenter & Charles (4) found meningococci in 7 patients with primary genital infections thought initially to be gonorrhoea, 6 males with urethritis and one female with cervicitis. Volk & Kraus (16) isolated *N. meningitidis* serogroup B from the urethra of an asymptomatic male who, despite frequent coitus with a female who had cervical gonorrhoea, did not develop gonococcal urethritis. The hypothesis presented was that the meningococcus might have prevented gonococcal infection by production of antigonococcal bacteriocin in vivo. Beck et al. (2) isolated *N. meningitidis* group B from the urethral discharge of a male and from the oropharynx of his female partner, with whom he had had orogenital contact. These authors also describe two further strains of *N. meningitidis*, one group B and the other group Y respectively, from the rectum of a male with proctitis and from the urethra and cervix of a female with cervicitis. Cases of meningococcal vulvovaginitis have also been reported in children (1, 6, 9).

Faur et al. (7) reported from the Public Health Laboratory services, The City of New York, the isolation of *N. meningitidis* from urogenital/rectal locations in 38 patients. They noted a striking increase in the isolations during the first 3 months of 1975 when they recovered 32 strains of meningococcus, whilst the isolations in 1974 and 1973 were only five and one strain respectively. The authors suggest that this marked increase should perhaps be of no surprise in view of changing sexual activities and social attitudes.

Most of the patients with urogenital/rectal infections of meningococci described in the papers mentioned, seem to have had clinical symptoms similar to gonorrhoea. Of our 6 patients from the V.D. clinic, only one—case 1—had clinical symptoms, which disappeared without treatment, however. In none of our cases were the meningococci demonstrated in direct Gram-stained preparations. Had this been the case, diagnostic problems would have arisen, as Gram-stained smears from meningococcal infections can be assumed to be identical with Gram-stained smears from infections caused by gonococci.

Gonococci are fairly commonly isolated from the pharynx of patients with gonorrhoea (3, 14). In 1973, we isolated gonococci from this location in 7% of patients with gonorrhoea—5% in men and 11.3% in women (14). The infection of the pharynx by gonococci is undoubtedly most often caused by orogenital contact. Considering the high carrier rate of *N. meningitidis* in the pharynx of the population (10, 13), it is not surprising that *N. meningitidis* is encountered in the urogenital tract, as gonococci and meningococci evidently invade one another's provinces (8). However, it seems that gonococci are much more often found in the pharynx than meningococci in the urogenital/rectal location, and whilst gonococci are more often encountered in the pharynx of the female than of the male, meningococci are more often demonstrated in samples from the genitals/rectum in the male. Further, whilst gonococci in the pharynx are rather difficult to eradicate (3, 14), the present paper shows that meningococci in the urethra and cervix have a tendency to disappear spontaneously.

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Received February 18, 1976

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