

CASE REPORT

Isolation of *Neisseria meningitidis* from an unusual site

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Abstract

A 59-year-old post-menopausal lady who had returned from a pilgrimage to Mecca about a month earlier presented with a three days' history of profuse vaginal discharge. *Neisseria meningitidis* was isolated from high vaginal swab specimens taken from her on 2 occasions, five days apart. Her symptoms disappeared without treatment after two weeks. We conclude that although the organism may have been a colonizer, it is possible that it was responsible for the self-limiting genital infection in this patient.

Key words: *Neisseria meningitidis*, genital infection.

INTRODUCTION

Neisseria meningitidis, a gram-negative diplococcus notorious for causing outbreaks of meningitis, is also known to be part of the normal nasopharyngeal flora in some people. The spectrum of diseases associated with meningococci range from occult sepsis with rapid recovery to fulminant, overwhelming disease resulting in death.¹ Blood borne spread of the organism may seed internal organs leading to complications such as osteomyelitis, arthritis, pericarditis, peritonitis, and pneumonia.¹ Meningitis may occur without meningococcaemia and meningococcaemia may occur without meningitis.¹ The clinical significance of isolates of *N. meningitidis* from the genitourinary tract is controversial as has previously been discussed in the literature.² Since the first reports of genital infection by *N. meningitidis* in the late 1930s and early 1940s, the organism has been associated with cases of urethritis, epididymitis, vaginal discharge and acute salpingitis.³ It is believed that orogenital sexual practices may be responsible for the presence of meningococci in anogenital sites.³ This paper reports a case of possible self limiting genital infection with *Neisseria meningitidis*.

CASE REPORT

A 59-year-old post-menopausal lady presented to the outpatient clinic with complaints of profuse

vaginal discharge of three days' duration. She had no other medical complaints, and her past medical history had been uneventful apart from a cone biopsy, which had been done a few years earlier for a suspected cervical lesion. No pathological lesion was found in the biopsy.

The attending doctor took a high vaginal swab and the lady was referred to the gynaecology clinic. No antibiotics were given. On presentation to the gynaecological clinic 5 days later, her symptoms of vaginal discharge still persisted and a repeat high vaginal swab specimen was taken as well as a PAP smear. She was given an appointment to return in a week, and once again, no antibiotics were given.

Both high vaginal swabs received at the Microbiology laboratory were gram stained and examined under the microscope. Numerous pus cells with intracellular gram-negative diplococci were seen. *Neisseria meningitidis* was grown on culture. The results of the culture were conveyed to the doctor who had seen her at the gynaecological clinic.

When the doctor reviewed the patient at her follow-up visit a week later, the patient no longer complained of vaginal discharge and there was also no sign of vaginal discharge on examination. On further questioning, it was found that the patient had returned from a pilgrimage to Mecca about a month before the first clinic visit and had taken the meningococcal vaccination 4 months prior to that visit. A sexual history was

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not obtained. In view of the fact that *N. meningitidis* had been isolated from the earlier two vaginal discharge specimens, a repeat high vaginal swab was taken and she was given a course of oral amoxicillin for the infection followed by a single dose of ciprofloxacin to clear possible colonization. However, the third high vaginal swab taken did not grow *N. meningitidis*, and the gram-stained smear also did not reveal any pus cells, or intracellular gram-negative diplococci. Throat swabs taken to exclude nasopharyngeal colonization also failed to grow the organism.

Microbiology

The high vaginal swab specimens were cultured onto Blood agar, Chocolate agar, Modified Thayer Martin Aga (MTM), Sabaraoud dextrose agar and Mac Conkey agar. The first specimen yielded a pure growth of *N. meningitidis* on the MTM, Chocolate agar and Blood agar plates while the second specimen grew a predominant growth of the same organism together with scanty alpha-hemolytic streptococci.

N. meningitidis was identified by its positive oxidase reaction, negative reaction with the Phadebact Gonococcal Coagglutination test and positive reactions with glucose and maltose in the CTA sugars test. However due to the unusual site of isolation of the organism, further confirmation of the culture was performed using the API NH (BioMérieux) which confirmed the identity of the organism as *N. meningitidis*. The beta-lactamase test was negative. Serogrouping done at the Institute For Medical Research, K.L. revealed that it was from serogroup W135.

In summary, *N. meningitidis* was isolated on two occasions from high vaginal swabs taken while the patient was symptomatic, but not after the patient's symptoms had spontaneously subsided.

DISCUSSION

This case highlights the importance of correctly identifying *Neisseria* isolated from the genitourinary tract. Strains of commensal *Neisseria* spp. like *N. subflava* bv. *flava* and *N. subflava* bv. *subflava* which produce acid from glucose and maltose may be misidentified as *N. meningitidis*.¹ Furthermore, in the rapid carbohydrate utilization tests, maltose obtained from some commercial sources may produce positive or equivocal results for *N. gonorrhoeae*, presumably owing to the presence of contaminant glucose.² This could erroneously lead to a

misidentification as *Neisseria meningitidis* if the commercial rapid carbohydrate utilization test is of poor quality. Therefore, careful laboratory testing is needed to confirm the identity of *Neisseria* species isolated.

The patient gave a history of recent vaccination and a pilgrimage to Mecca. Cases of serogroup W135 in association with the Haj in Saudi Arabia have been reported in many countries.⁴ It is possible that the strain of *N. meningitidis* serogroup W135 was acquired initially by oropharyngeal colonization while the patient was in Mecca, and subsequently spread to her genital tract. The vaccination currently given to Haj pilgrims in Malaysia does not prevent against infection with serogroup W135. Furthermore, the polysaccharide vaccine does not provide protection against carriage⁴, therefore she may have been colonized by the W135 strain while in Mecca.

This patient's vaginal swab taken while she was symptomatic with vaginal discharge grew *N. meningitidis* but 2 repeated swabs taken after her symptoms had disappeared did not grow the organism. She was given a course of amoxicillin to treat possible infection and a stat dose of ciprofloxacin to prevent persistent colonization with the organism. The Canadian Paediatric Society Statement³ in a joint statement with the American Academy of Paediatrics, states that chemoprophylaxis is indicated for close contacts of all persons with invasive meningococcal disease, whether sporadic or in a cluster or outbreak. In this case, we presumed that *N. meningitidis* was responsible for the vaginal discharge the patient was experiencing, probably due to a vaginitis or cervicitis. However, the infection seemed to be self-limited, clearing spontaneously without antibiotics. No prophylaxis was given to her contacts and whether or not this patient actually required the single dose of ciprofloxacin to clear possible carriage is controversial. Although colonization with this organism is not reported to be a known risk factor for invasive disease, antibiotics are usually given to clear colonization after an episode of invasive disease, to the index case and also to close contacts.⁵ There is a need for more explicit guidelines on the treatment of localized infections and contacts of patients with localized infections.

Other investigators have also reported on urogenital infections with *N. meningitidis*. In Fallon and Robinson's report⁶ a 6-year-old girl had presented with vaginal discharge from which *N. meningitidis* group B was isolated. Like the

case we report here, the vulvovaginitis subsided rapidly without specific treatment. The authors suggested that the infection could have been carried on the child's fingers from her mouth or nose to her vagina. Conde-Glez and Calderon³ reported 6 cases of acute urethritis and 3 cases of acute cervicitis caused by *N. meningitidis* group B. Of the 6 patients with urethritis, 5 were heterosexual men and one was a homosexual, whereas the three women with cervicitis were prostitutes. All of them were clinically thought to have gonorrhoea with symptoms such as profuse discharge and gram negative intracellular diplococci seen on direct microscopic examination of the exudates. However, culture of the specimens later confirmed all nine as *Neisseria meningitidis* Group B. They were all empirically treated with penicillin. When they returned for their test of cure visit, there were no clinical signs or symptoms in eight of them, and *N. meningitidis* was no longer isolated in all nine. Apart from one of the patients who suffered from coinfection with *Chlamydia trachomatis*, all the patients were free from *C. trachomatis*, *Trichomonas*, bacterial vaginosis and had negative VDRL tests.

In another report, Hagman *et al.*² described the isolation of *N. meningitidis* from urogenital specimens from 3 heterosexual patients. One of the cases was a 40-year-old quadriparous female who had visited the clinic to discuss a change of contraceptive method and had no genitourinary symptoms, but vaginal discharge was noted on pelvic examination and the discharge grew *N. meningitidis* serogroup Y. A throat swab culture from this lady was negative for pathogenic *Neisseria*. This patient was treated with amoxicillin 750mg b.d. for 10 days after which repeat cultures were negative for *N. meningitidis*. Her husband who had no subjective or objective signs of infection had sparse *N. meningitidis* serogroup Y grown from his throat swab. (He was not treated as he was asymptomatic).

In yet another report, Odegard and Gundaensen⁷ described nine cases of *N. meningitidis* isolation from urogenital/rectal samples sent for gonococcal culture. One of these patients complained of itchy vaginal discharge and cultures from her cervix grew *N. meningitidis* serogroup C. A control specimen taken 2 weeks later did not grow the organism again, and the symptoms also disappeared spontaneously without treatment. The authors concluded that meningococci in the urethra and cervix had a tendency to disappear spontaneously. Also among these nine cases

was a case of symptomless infection in which the organism disappeared without treatment and a case of an asymptomatic carrier of meningococcus in the rectum. Therefore, meningococci from these sites in an asymptomatic patient may indeed be just part of carriage.

This case reminds us that pathogenic *Neisseria* isolated from vaginal discharge are not necessarily *N. gonorrhoeae* even when gram stains show the classical intracellular gram-negative diplococci. Furthermore, *N. meningitidis* may cause male and female genital tract infections that are clinically indistinguishable from gonococcal infections such as acute purulent urethritis, cervicitis, salpingitis and proctitis.¹ Careful identification is therefore necessary to confirm the organism's identity as the isolation of certain *Neisseria spp.* has important social implications as well.

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