Tidsskriftet Tidsskrift for Den norske legeforening

Gonococcal mastitis

SHORT CASE REPORT

KATJA LØVIK

katja.lovik@gmail.com
Clinic of Surgery
St Olav's Hospital, Trondheim University Hospital
Katja Løvik, formerly in stage 1 of specialist training at St Olav's Hospital, now specialty registrar at the Accident and Emergency Department in Oslo.
The author has completed the ICMJE form and declares no conflicts of interest.

KJERSTI WIK LARSSEN

Clinic of Laboratory Medicine
St Olav's Hospital, Trondheim University Hospital
Kjersti Wik Larssen, specialist in medical microbiology and senior consultant.
The author has completed the ICMJE form and declares no conflicts of interest.

MARGRETE SOLVANG

Department of Dermatology
St Olav's Hospital, Trondheim University Hospital
Margrete Solvang, specialist in dermatology and venereology, and senior consultant.
The author has completed the ICMJE form and declares no conflicts of interest.

HÅKON LUND-HANSSEN

Department of Radiology and Nuclear Medicine
St Olav's Hospital, Trondheim University Hospital
Håkon Lund-Hanssen, specialist in radiology and departmental senior consultant.

The author has completed the ICMJE form and declares no conflicts of interest.

MONICA JERNBERG ENGSTRØM

Clinic of Surgery
St Olav's Hospital, Trondheim University Hospital
Monica Jernberg Engstrøm, specialist in breast and endocrine surgery and senior consultant.
The author has completed the ICMJE form and declares no conflicts of interest.

FREDRIK FØRSUND BREMTUN

Clinic of Surgery
St Olav's Hospital, Trondheim University Hospital
Fredrik Førsund Bremtun, specialty registrar in breast and endocrine surgery.
The author has completed the ICMJE form and declares no conflicts of interest.

A young woman experienced pain and swelling in a non-lactating breast. The culture test result showed an unusual microbe, which is increasingly prevalent in Norway and internationally.

A previously healthy woman in her twenties contacted an emergency doctor due to a five-day history of pain and swelling below and around the areola of her left breast. There was no prior trauma to the breast. The patient had a fever of around 38°C and was in a reduced general condition for the first two days, after which she was afebrile. She noticed a discharge of blood and yellow fluid from the mamilla. Both nipples were pierced several years previously, without complications. She did not use any regular medications apart from hormonal contraception.

She was referred to the emergency department, where rubor localised to the areola was found, and a palpable, tender 3×3 cm mass below the areola. Some bloody fluid was present as well as a yellow scab lateral to the entry point of the piercing. The patient was afebrile with blood pressure 124/79 mmHg, pulse 73 beats per minute and respiratory rate 14 breaths per minute. Biochemical samples showed leukocytes 10.4 × 10^9/L (reference range 4.1–9.8) and CRP 15 mg/L (< 5). No sexual history was obtained. The patient's general condition was good, and rapid initiation of antibiotics or other acute intervention was not considered necessary. A sample from the breast secretion was taken for bacteriological examination, and the patient was referred to the breast and endocrine surgery outpatient clinic for further assessment and treatment.

The results of the bacteriological cultures were available three days later at the outpatient clinic appointment. They showed scant growth of *Neisseria gonorrhoeae* on blood agar and chocolate agar, identified with MALDI-TOF MS (Bruker Daltonics) and a specific in-house *N. gonorrhoeae* polymerase chain reaction test (PCR). The piercing in the left breast was removed. The patient reported unprotected sexual contact with two partners in the previous month. Ultrasound of the breast showed thickened, oedematous skin in the areolar and to some extent the periareolar region. A possible fluid-filled area of the mamilla of 1×1.5×0.3 cm was understood to be related to the hole made by the piercing. No abscesses were observed.

The patient was referred to the outpatient clinic for venereal diseases the following day. Further investigations detected *N. gonorrhoeae* DNA in throat secretions, but not vaginally or anally. No other sexually transmitted infections were detected, neither *Chlamydia trachomatis*, hepatitis B and C, syphilis nor HIV. The recommended standard treatment for uncomplicated genital gonorrhoea in Norway is ceftriaxone 1 g intramuscularly. In consultation with specialists in infectious diseases and based on the result of antimicrobial susceptibility testing (sensitive, MIC < 0.016 mg/L), treatment was initiated with intramuscular ceftriaxone. Due to the unusual location and the uncertainty about direct transmission (from mouth to breast), the ceftriaxone dose was increased to 2 g. It was also discussed whether the patient should receive a few days of intravenous therapy, but she was in good general condition and was planning to be out of town the following week.

The standard treatment for gonorrhoea in various countries is ceftriaxone in combination with azithromycin. This was also considered, but as no antimicrobial susceptibility test for azithromycin had yet been performed at the reference laboratory, and the bacterial strain was sensitive to doxycycline, we chose to add doxycycline 100 mg × 2 orally for seven days. At the one-week check-up, the patient had less swelling, erythema and breast pain, and no other symptoms. At the final check-up four weeks later, the patient was free of symptoms and confirmed that she had notified her recent partners so that they could undergo relevant examinations as part of contact tracing in accordance with the Norwegian Control of Communicable Diseases Act.

Discussion

Humans are the only reservoir for *N. gonorrhoeae*. The most common clinical presentation is urethritis or cervicitis, but upper genital tract infections (epididymitis, pelvic infection), bacteraemia or bacteraemic spread to joints also occurs. Extragenital infections in various organs such as the eye, throat and rectum are also observed. Gonococci have poor survival outside the body and cultures can give a false negative result, particularly if there is a long transport time before the sample is inoculated in the laboratory, or if the sample is taken from mucosa with competing bacterial flora. Detection of gonococci using PCR analysis is more sensitive.

Mastitis or breast abscess with gonococci is a rare condition that, according to international databases, has only been described four times previously. The first two cases were of two men in Australia with unilateral mastitis, where the mode of transmission was identified as probable mouth to breast contact (1, 2). The third case was in the United States, where a woman reported mouth to breast contact one week before symptom onset (3). The final case concerned a Dominican woman who also reported mouth to breast contact with two recent partners (4).

A common factor in all the reported cases is that the patients had a breast piercing. Nipple piercing creates an unnatural entry point for microbial infiltration. In the cases described, the gonococcal reservoir appears to be the throat, and together this provides a probable route of infection from mouth to breast.

Gonorrhoea is defined as a communicable disease, and its prevalence has increased considerably in Norway in the last decade. There has been a tenfold increase in annual reported cases in women, from 51 in 2012 to 499 in 2022. The increase is mainly in the age group 20–29 years (5). According to the Norwegian Surveillance System for Communicable Diseases (MSIS), 2569 cases of gonorrhoea had been reported by mid-November 2023 (6). The reference laboratory for gonorrhoea in Norway is located at the Norwegian Institute of Public Health, and all strains determined through culturing in microbiological laboratories in Norway are routinely sent there as part of the national surveillance. The isolate in question belongs to sequence type 9362 (ST-9362). This was the second most common sequence type in Norway in 2022 (7), and it continues to show a high prevalence rate hitherto in 2023. (D. Caugant, Norwegian Institute of Public Health, personal communication).

Patients who have non-lactating mastitis with no obvious cause should be referred to a breast diagnostic centre for assessment in order to rule out breast cancer. PCR testing for *N. gonorrhoeae* should be considered for abscess content if normal culture does not show growth of pathogenic bacteria, and the patient should be considered for testing for sexually transmitted infections. This will enable rapid diagnosis and subsequent identification of contacts.

The patient has consented to publication of this article.

The article has been peer-reviewed.

REFERENCES

1. Bodsworth NJ, Price R, Nelson MJ. A case of gonococcal mastitis in a male. Genitourin Med 1993; 69: 222–3. [PubMed][CrossRef]

2. Pendle S, Barnes T. Neisseria gonorrhoeae isolated from an unexpected site. Sex Health 2016; 13: 593–4. [PubMed][CrossRef]

3. Bateman AC. Unusual cause of a wound infection. J Appl Lab Med 2017; 2: 444–8. [PubMed][CrossRef]

4. Ceniceros A, Galen B, Madaline T. Gonococcal breast abscess. IDCases 2019; 18. doi: 10.1016/j.idcr.2019.e00620. [PubMed][CrossRef]

5. Folkehelseinstituttet. Bekymringsfull økning i gonoré. https://www.fhi.no/nyheter/2023/bekymringsfull-okning-i-gonore/ Accessed 10.4.2023.

6. Folkehelseinstituttet. MSIS statistikkbank. https://allvis.fhi.no/msis/sykdomshendelser?etter=diagnose&fordeltPaa=aar&diagnose=901 Accessed 8.11.2023.

7. Folkehelseinstituttet. Overvåkning av seksuelt overførbare infeksjoner. Årsrapport 2022. https://www.fhi.no/contentassets/3e70076e6e704b27843e26cc33c4214e/soi_arsrapport_2022_endelig.pdf Accessed 8.11.2023.

Publisert: 3. April 2024. Tidsskr Nor Legeforen. DOI: 10.4045/tidsskr.23.0768
Received 8.11.2023, first revision submitted 16.1.2024, accepted 14.2.2024.