

Coinfection of gonorrhoea and chlamydia trachomatis: A case report

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Abstract Gonorrhoea (GO) is the most common sexually transmitted infection (STI) caused by *Neisseria gonorrhoeae* (NG). In Indonesia, the GO sequence is the highest of STI diseases. GO in men can cause urethritis, while women are usually asymptomatic. Chlamydia is caused by *Chlamydia trachomatis* bacteria. Men infected with *Chlamydia* typically present with urinary tract inflammation, fever, penile discharge, and severe testicular pain. Male urethritis is a coping disease that presents purulent or mucopurulent discharges through the urethra, sometimes accompanied by dysuria. Gonorrhoea urethritis is the most common venereal disease today and can be found worldwide. Timely treatment and choosing the right medicine at the right dose can eliminate the infection, prevent complications, prevent further spread, and avoid the development of drug resistance. We reported a case of gonorrhoea urethritis in a 25-year-old man with a complaint of yellow-whitish discharge from the opening of the penis. The diagnosis was established based on the Gram staining, culture, PCR tests. The patient was treated with azithromycin and cefixime, resulting in clinical improvement.

Key words

Gonorrhoea, chlamydia, coinfection.

Introduction

Gonorrhoea is a sexually transmitted infection caused by *Neisseria gonorrhoeae*, Gram-negative coccus bacteria, and aerobic bacteria. Risk factors for gonorrhoea include multiple partners, young age, unmarried status, sex workers, psychotropic drugs and supplements (drugs), socioeconomic level, low educational level, inconsistent use of condoms, and sexually transmitted infections characterized by a purulent or mucopurulent discharge from the urethra, sometimes accompanied by dysuria.^{1,2} The major pathogens include *Neisseria gonorrhoeae* and *Chlamydia trachomatis*. These two organisms must be taken into account in the

management^{3,4}

Gonorrhoea is found worldwide and is the most common sexually transmitted disease today. The World Health Organization estimates that at least 25 million new cases are discovered each year worldwide.^{3,6} According to the Centers for Disease Control and Prevention, it is estimated that about 820,000 people in the United States develop a new gonorrhoea infection each year.⁷ The causative agent of gonorrhoea was discovered by Albert Ludwig Sigismund Nesser in 1879. The origin of the gonococcal infection is unknown. This makes gonorrhoea the second most common infectious disease in the United States, second only to chlamydia.^{2,4,6}

Neisseria gonorrhoeae belongs to the diplococci group, is acid-fast. Colonies are seen in the form of coffee beans with a width of 0.8 mm and a length of 1.6 mm.⁸ In direct Gram stain

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Figure 1. Venereological status in the genital region showed an efflorescence of cloudy white discharge.

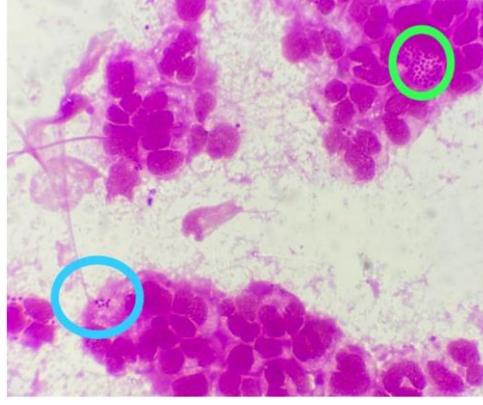


Figure 2. Gram stain of intracellular and extracellular Gram-negative diplococci (100x magnification)

preparations, these bacteria are Gram-negative, visible on the outside and inside of leukocytes, do not last long in free air, die quickly in dry conditions, cannot tolerate temperatures above 39°C, and cannot tolerate disinfectants.⁸⁻¹⁰ Clinical symptoms of infection found in men are acute anterior urethritis and extend proximally, resulting in local ascending and disseminated complications.¹¹ Other symptoms include itching and burning sensation in the distal urethra around the external urethral orifice, dysuria, pollakiuria, mucopurulent discharge from the external urethral orifice, sometimes accompanied by blood and pain on erection.^{4,12}

The diagnosis of gonorrhea urethritis is based on medical history. Urethral secretion can be found in the objective assessment. Gram and culture examination with Thayer Martin, enzyme immunoassay, and PCR are among the other assays that can be performed.^{5,13-15} Chlamydia is caused by *Chlamydia trachomatis*.^{3,4} The clinical manifestations of this disease in men include urethritis, epididymitis, orchitis, and infertility.^{16,17} In addition, it can also cause proctitis, pharyngitis, Reiter's syndrome, neonatal conjunctivitis, and pneumonia in both men and women.^{18,19} The laboratory diagnosis of gonococcal infection depends on the identification of *N. gonorrhoeae*. PCR method for real-time PCR multiple detection CT and NG

coexisting specimen detection results are divided into four types: negative, positive CT, NG positive, positive CT, and NG.

Case report

A 27-year-old man came to the dermatology and venerology polyclinic of Hasanuddin University Hospital with a complaint of a thick whitish fluid on the penis that occurred two days ago. In addition, there was dysuria. There was no history of fever or pain in the lower abdomen, and there was no history of sexual intercourse with more than one partner. There was also no swelling of the penis. Based on the marital status, the patient was single. The patient had sexual intercourse seven days ago. His previous medical history for current complaint and history of drug allergy was denied.

The general condition was good on physical examination, and consciousness was compos mentis; blood pressure 110/70 mm Hg, pulse 80x/min, respiration 18x/min, and a temperature of 36.8°C. Venereological status showed cloudy white discharge on the external genitalia and erythema of the external urethral ostium. The results of the clinical microbiology laboratory from Gram examination showed +2 epithelium, +3 PMN. Gonorrhea culture showed no growth (TAP) of bacteria on *N. gonorrhoeae* culture



Figure 3 No visible colony growth on Thayer Martin culture media (left). Polymerase Chain Reaction (PCR) examination to obtain DNA from *Neisseria gonorrhoea* and *Chlamydia trachomatis* (right).

medium. Gram stain examination was also performed by culture and PCR. On Gram staining, Gram-negative diplococci were identified.

The history, physical examination, and supporting studies showed that the patient was diagnosed with gonorrhea urethritis and treated with azithromycin 1x1000 mg in a single dose, Cefixime 400 mg, ceftriaxone injection 250 mg, flamar 2x500 mg. On the 7th day of follow-up, the patient still had complaints of white secretion from the penis, but the pain during urinating had improved. No secretions were found from the venereological status of the genital region (external urethral ostium). The patient received a single dose of ceftriaxone 250 mg injection.

In this case, a 27-year-old man came to the dermatology and venerology polyclinic of Hasanuddin University Hospital with chief complaints of thick whitish fluid on the penis since two days ago. The literature showed that the prevalence is the same between men and women of all ages, although, for a certain age range, the incidence of gonorrhea varies with age.²⁻⁴ The highest infection rate occurs at a

young age, especially in adolescent girls and boys aged 15–24 years.^{5,10} Infection rates also increased in the older age group.^{20,21}

The patient in our case had a complaint of thick whitish discharge on the penis, accompanied by pain when urinating. There was no history of fever or pain in the lower abdomen and no penile swelling. In the literature, a manifestation of gonococcal infection in men is urethritis, characterized by spontaneous cloudy or purulent discharge from the external urethral passage of the penis.¹⁷ Initial symptoms may show typical redness and swelling of the urethral passage, relatively mild itching or pain, and discharge. After 24 hours, manifestations and more yellowish purulent discharge, dysuria, frequent urination, and urge to urinate may appear.^{11,12}

There was a history of having sexual intercourse with more than one partner in this case. In the literature, risky sexual behavior, including unprotected sex and sex with multiple partners, is a significant factor in gonorrhea.⁶ On Gram stain examination, intracellular or extracellular gram-negative diplococci were found. According to the literature, Gram stain examination can be performed on the urethral exudate in males, skin lesions, and cerebrospinal fluid. Usually, the bacteria are found to be intracellular, adjacent to leukocytes, or with a kidney-like appearance.^{12,13}

A culture examination was conducted to determine the causative bacteria. This approach is the gold standard in detecting bacteria with very high sensitivity.¹⁵ One of the disadvantages of conventional methods is that it generally takes 5-7 days to get positive results. This technique is the only method for identifying viable bacteria with very little contamination.^{2,4}

In this case, a PCR examination was performed to identify the DNA of *Neisseria gonorrhoea* and *Chlamydia trachomatis*. The laboratory

examination for the detection of CT and NG has developed in recent years. The culture method continued with the identification of bacteria, and the non-culture method had different levels of sensitivity and specificity. PCR testing can provide fast, sensitive results by producing accurate product amplification, while requiring a few samples. Because of its advantages, this method is beneficial for detecting the presence of organisms in low concentrations and asymptomatic patients.¹²

The patient was treated with azithromycin 1 gram orally in a single dose and Cefixime 400 mg in a single dose. It is stated that gonococcal infection is a disease that is easily cured using antibiotics. Since the failure of the first treatment with penicillin in 1950, bacterial resistance has become a severe problem. Single-dose treatment is the first choice for the treatment of gonorrhea to ensure patient compliance with treatment. In Indonesia, ceftriaxone or Cefixime is a routine treatment regimen for gonorrhea. In this case, a single dose of Cefixime 400 mg was administered. The advantage of Cefixime is the oral administration route, making it to be widely chosen by patients who do not like injection treatment. The administration of therapy using a single oral dose compared with a single dose of injection shows an improvement effect within the first 24 hours. Guidelines for the management of sexually transmitted infections of the Indonesian Ministry of Health in 2010 recommend the use of Cefixime as a treatment for gonorrhea with complications.^{22,23}

The Indonesian Ministry of Health in 2015 and WHO had recommended combination therapy with azithromycin, Cefixime, and ceftriaxone injection. In addition, the combination therapy of ceftriaxone 250 mg injection intramuscularly in a single dose and azithromycin 1 gram orally in a single dose can also be given in cases of

gonorrhea. Other alternative therapies include the injection of ceftriaxone 250 mg in a single dose, Cefixime 400 mg orally in a single dose, and injection of kanamycin 2 grams intramuscularly. CDC recommends using a two-drug combination for uncomplicated gonococcal infections of the urethra, cervix, and rectum. The recommended regimen is the same as dual therapy from the WHO recommendation.^{22,23}

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