



## Case Study

### A Case of Gonococcal Urethritis

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#### ABSTRACT

#### Keywords

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*Neisseria gonorrhoeae* is one of the important sexually transmitted disease which manifests as urethritis in males and endocervicitis in females. Here we are reporting a case of male patient who presented with history of urethral discharge after exposure to commercial sex worker. Gram staining of the discharge showed numerous pus cells with intracellular gram negative diplococci. Also culture on chocholate agar showed oxidase and catalase positive colonies which fermented glucose. A presumptive diagnosis of *Gonococcal urethritis* was made and treated. Further the patient was referred to ICTC (Integrated Counselling and Treatment Centre) for counselling and to know the HIV status.

## Introduction

Urethritis is the most frequent Sexually Transmitted Disease syndrome seen in men. It is characterized by urethral inflammation and has traditionally been classified as gonococcal or nongonococcal urethritis (NGU). *Neisseria gonorrhoeae* encompass the more clinically important infectious causes of male urethritis. It was first described in gonorrhoeal pus by Neisser in 1879 (Ananthnarayan 9<sup>th</sup> edition). In males, the major genitourinary symptoms(Brian

Wong, 2014)of gonorrhoea include the following:

- Urethritis: The major manifestation of gonococcal infection in men; initial characteristics include burning upon urination and a serous discharge; a few days later, the discharge usually becomes more profuse, purulent, and, at times, tinged with blood

- Acute epididymitis: Usually unilateral and often occurs in conjunction with a urethral exudate
- Urethral strictures: Have become uncommon in the antibiotic era, but they can present with a decreased and abnormal urine stream, as well as with the secondary complications of prostatitis and cystitis
- Rectal infection: May present with pain, pruritus, discharge, or tenesmus

Many factors influence the manner in which gonococci mediate their virulence and pathogenicity(Brian Wong, 2014).

- Pili help in attachment of gonococci to mucosal surfaces and contribute to resistance by preventing ingestion and destruction by neutrophils.
- Opacity-associated (Opa) proteins increase adherence between gonococci and phagocytes, promote invasion into host cells, and possibly down-regulate the immune response.
- Porin channels (porA, porB) in the outer membrane play key roles in virulence. Gonococcal strains with porA may have inherent resistance to normal human serum and an increased ability to invade epithelial cells,

Gonococci attach to the host mucosal cell (pili and Opa proteins play major roles) and, within 24-48 hours, penetrate through and between cells into the subepithelial space. A typical host response is characterized by invasion with neutrophils, followed by epithelial sloughing, formation of submucosal microabscesses, and purulent discharge. If left untreated, macrophage and lymphocyte infiltration replaces the neutrophils. Some gonococcal strains cause an asymptomatic infection, leading to an asymptomatic carrier state in persons of either sex(Brian Wong, 2014).

## Case report

A male patient aged around 25 years came to our hospital with the complaints of discharge per urethra since 10 days. He also had burning micturition since 10 days which was followed 12 hours later by foul smelling white discharge from urethra which continued to be present till the day he visited the hospital.

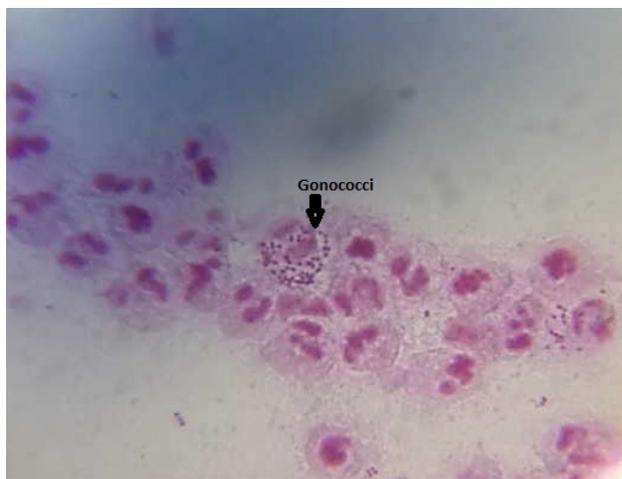
He also gave history of intercourse with a commercial sex worker 7 days prior to the onset of all symptoms.

On examination, there was mucopurulent discharge from urethra. The meatus was cleaned using a gauze soaked in saline. The discharge was collected using a sterile swab under aseptic precautions. It was processed for Gram staining and was immediately inoculated on chocolate agar and incubated overnight at 37<sup>0</sup>c under 5-10% carbon di oxide.

Gram staining was done by Jensen's method(Mackie and McCartney, 14<sup>th</sup> edition) which showed many pus cells and intracellular gram negative diplococci, with adjacent sides concave(Kidney shaped). On chocolate agar colonies were small, round, slightly raised and greyish white. Gram staining was done from the colonies which showed gram negative diplococci. The colonies were oxidase and catalase positive and fermented glucose and not maltose.

## Discussion

Despite the recent advances in diagnosis, surveillance and treatment, sexually transmitted diseases (STDs) remain one of the leading diseases throughout the world. Increased promiscuity and onset of sexual activity at an early age are two important contributing factors to the spread of sexually transmitted diseases.



**Fig.1** Microscopic view of gram stain smear under 100X. Arrow showing Intracellular Gram negative diplococci. Numerous pus cells are also seen.

Gonorrhoea is the second most commonly reported notifiable disease in the United States (CDC, 2011). *Neisseria gonorrhoeae* (also known as the Gonococcus) colonizes primarily in the human genitourinary tract, giving rise to the sexually transmitted infection gonorrhoea (Achchhe Lal Patel, 2011). Gonorrhoea is exclusively a human disease, there being no natural infection in animals. The existence of asymptomatic carriage in women makes them a reservoir, serving to perpetuate infection among their male contacts. The mode of transmission is venereal. Fomites do not play a role in transmission as the organism dies rapidly outside the human body. The incidence of Gonorrhoea is increasing steeply worldwide (Ananthnarayan 9<sup>th</sup> edition). The importance of this disease is not only limited to its high incidence and acute manifestations, but also extends to the complications and disturbing sequelae. It is also an important risk factor for the transmission of HIV infection (Vinod K. Sharma, 2004). In India, a majority (74.5%–89%) of men attending a Sexually Transmitted Infection clinic give a history of contact with Commercial sex workers (Vinod K. Sharma, 2004).

The patient had intercourse with a Commercial sex worker a week prior to the onset of symptoms. He also presented with symptoms of mucopurulent discharge per urethra. A presumptive diagnosis (CDC, 2013) of Gonorrhoea was made based on history, symptoms, clinical findings, gram stain findings, colony morphology and biochemical reactions. The patient was treated and referred to ICTC for counselling.

Among the aetiological agents of treatable sexually transmitted diseases (STDs), *Neisseria gonorrhoeae* is considered to be most important because of emerging antibiotic resistant strains that compromise the effectiveness of treatment of the disease - gonorrhoea (Achchhe Lal Patel, 2011). The primary public health issue for the gonococcal infection is to interrupt transmission chains and to reduce the overall disease burden. The persistence of gonorrhoea, its association with poor reproductive and sexual health outcomes, and the prevalence of Antimicrobial Resistance have made the infection a major public health concern. Owing to antimicrobial resistance, the public health cost for these sexually transmitted diseases, including the role in potentiating HIV infection/transmission and female infertility, have made it an emerging problem, especially for vulnerable populations (Paola Stefanelli, 2011). Unfortunately during the last few decades, *N. gonorrhoeae* has developed resistance not only to less expensive antimicrobials such as sulphonamides, penicillin and tetracyclines but also to fluoroquinolones. The resistance trend of *N. gonorrhoeae* towards these antimicrobials can be categorised into pre-quinolone, quinolone and post-quinolone era. Among the antimicrobials available so far, only the third-generation cephalosporins

could be safely recommended as first-line therapy for gonorrhoea globally. However, resistance to oral third-generation cephalosporins has also started emerging in some countries. Therefore, it has become imperative to initiate sustained national and international efforts to reduce infection and misuse of antibiotics so as to prevent further emergence and spread of antimicrobial resistance (Achchhe Lal Patel, 2011). One of the main objectives in public health concerns of *N. gonorrhoeae* infection is to shorten the duration of infection, thus decreasing transmission and eliminating reservoirs of infection (Paola Stefanelli, 2011).

Vinod K. Sharma, Sujay Khandpur, Changing patterns of sexually transmitted infections in India ,The National medical journal of India,Vol 17,No.6, Nov-Dec2004

## References

- Achchhe Lal Patel, Uma Chaudhry, Divya Sachdev, Poonam Nagpal Sachdeva, Manju Bala& Daman Saluja, An insight into the drug resistance profile & mechanism of drug resistance in *Neisseria gonorrhoeae* Indian J Med Res 134, October 2011, pp 419-431
- Ananthnarayan and Paniker's Textbook of Microbiology, 9<sup>th</sup> edition,230.
- Brian Wong, Gonorrhea Medscape,2014, (*emedicine. Medscape com/article/218059-overview*)
- CDC,Gonorrhea Laboratory Information Characteristics of *N. gonorrhoeae* and Related Species of Human Origin, December 10, 2013
- CDC,Sexually transmitted disease surveillance,2011
- Mackie and McCartney, Practical Medical Microbiology,14<sup>th</sup> edition,799
- Paola Stefanelli,Emerging Resistance in *Neisseria meningitidis* and *Neisseria gonorrhoeae* ,Expert Rev Anti Infect Ther. 2011;9(2):237-244.