

## A case report of Urethritis in a Male patient infected with *Neisseria gonorrhoeae*, from a tertiary care hospital, Bangalore, Karnataka

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### ABSTRACT :

*Neisseria gonorrhoeae* is a bacterial pathogen responsible for gonorrhoea and various sequelae that tend to occur when asymptomatic infection ascends within the genital tract or disseminates to distal tissues.<sup>1</sup> Global rates of gonorrhoea continue to rise, facilitated by the emergence of broad-spectrum antibiotic resistance that has recently afforded the bacteria 'superbug' status<sup>8</sup>. *N. gonorrhoeae* is exquisitely adapted to life in humans, having evolved novel strategies to succeed in their restricted mucosal niche. It is one of the important sexually transmitted disease which manifests as urethritis in males and endocervicitis in females.<sup>3</sup> Here we are reporting a case of 26 years 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 commercially available 5% sheep blood agar and chocolate 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. Keywords : Gonorrhoea, Urethritis, ICTC

### I. BACKGROUND:

Sexually transmitted diseases cause high rates of morbidity and even mortality in adults and newborns. Many of them amplify the risk of HIV acquisition. In the developing countries, incidence and prevalence of sexually transmitted diseases are high, constituting a substantial health and economic burden, particularly for countries strained with other emerging health problem.

Urethritis is the most frequent Sexually Transmitted Disease syndrome seen in men.<sup>3</sup> 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. This pathogen is Gram-negative non-motile aerobic diplococcus<sup>4</sup>. It is fastidious microorganism, which requires incubation in the presence of CO<sub>2</sub>. It is recognized as acute bacterial infection, which commonly transmitted through sexual contact or perinatal. The patient may be asymptomatic, or may shows symptoms.

In males, the major genitourinary symptoms 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.<sup>6</sup>

Multiple virulence factors, which strongly participate in the pathogenesis of gonococcal infections, have been documented. Gonococci initially adhere to the epithelial cells followed by penetration until reach the subepithelial space where infection is established. Gonococcal pili, porin, and Opa proteins mediate adhesion and invasion. In addition, the presence of lipopolysaccharides provoke an inflammatory response and result in TNF- $\alpha$  release which is responsible for the majority of the symptoms accompanying the disease.<sup>5</sup> Furthermore, stimulation of huge number of neutrophil may lead to micro abscesses. Reports on the occurrence of gonococcal urethritis in developing countries, especially within India are limited. Here, we report

a case of gonococcal urethritis in a 26-year old male from a rural community of Karnataka.

## II. CASE REPORT:

A 26-year-old male patient came to the dermatology OPD of Vydehi Institute of medical sciences and RC, Bangalore on 22/05/2023 with complaints of severe burning sensation during urination and dysuria for 3 days. Additionally, he was suffering from penile discharge and testicular tenderness.

He had a history of multiple heterosexual relationships with a last contact 1 week ago. On physical examination, vital signs showed:

Blood pressure 110/70mmHg, pulse 82bpm, and temperature 37.6°C. On examination, there was mucopurulent cloudy discharge from urethra. Swollen testicles were also observed. Following counseling, the discharge was collected using a

sterile swab under aseptic precautions and sent to the laboratory for Direct microscopy and culture sensitivity testing. Direct microscopy revealed numerous pus cells along with intracellular gram negative diplococci. Sample was streaked immediately on commercially available sheep Blood agar, Macconkey agar and chocolate agar plates then incubated overnight at 37°C in the presence of 5% CO<sub>2</sub>. Following the incubation period, greyish white, transparent to opaque, slightly raised colonies with 1–2 mm diameter were observed on Blood agar and on Chocolate agar. On Macconkey agar there was no growth. Gram staining was done from the colonies which showed gram negative diplococci opposing each other on the concave sides. The colonies were oxidase and catalase positive and fermented glucose and not maltose. These results were sufficient for the presumptive identification of *N. gonorrhoeae*.

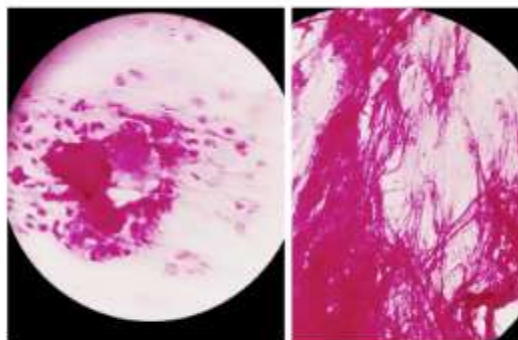


FIGURE:1

Direct microscopy shows intracellular Gram negative diplococci



FIGURE:  
2: 2

Bacterial growth on agar plates

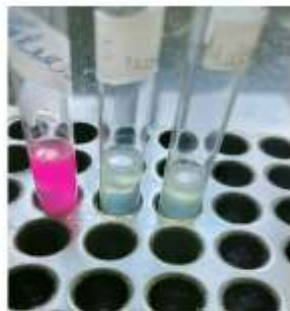


FIGURE:

3

Biochemical reactions : (a) Catalase test (positive)  
(b) Oxidase test (positive)  
(c) Sugar fermentation  
test(glucose fermented, sugar and maltose not  
fermented)

Antibiotic sensitivity testing was done Using Kirby-Bauer disk diffusion method. N. gonorrhoeae strain was sensitive to Ceftriaxone,

Cefpodoxime, Azithromycin, Tetracycline, Cefixime but resistant to Penicillin. Patient was treated with Azithromycin.



FIGURE:4

Antibiotic sensitivity testing

### III. DISCUSSION:

Despite the recent advances in diagnosis, surveillance and treatment, sexually transmitted diseases (STDs) remain one of the leading diseases throughout the world. Neisseria

gonorrhoeae is considered to be most important because of emerging antibiotic resistant strains that compromise the effectiveness of treatment of the disease- gonorrhoea. Neisseria gonorrhoeae colonizes primarily in the human genitourinary

tract, giving rise to the sexually transmitted infection gonorrhoea<sup>9</sup>. 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. It is also an important risk factor for the transmission of HIV infection<sup>10</sup>. In India, a majority (74.5%–89%) of men attending a Sexually Transmitted Infection clinic give a history of contact with Commercial sex workers.

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. 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. 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.<sup>1</sup> 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.<sup>2</sup>

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