



Review Article

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An Overview on Gonorrhea Diagnosis and Management in Primary Health Care Centre

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ABSTRACT

Background: Sexually transmitted infections are the most common communicable conditions and affect the health and lives of people worldwide. According to the World Health Organization (WHO), sexually transmitted infections are one of the four types of disease for which adults around the world most commonly seek medical help. Sexually transmitted infections can cause neonatal and fetal damages, tumors of the genital tract, and secondary infertility. A number of diagnostic strategies and tests, of variable quality, are available for the individual pathogens. Objectives: We aimed to review the literature reviewing the pathophysiology, clinical symptoms and impressions, risk factors, diagnosis, and management of gonorrhea. Methodology: PubMed database was used for articles selection, papers on were obtained and reviewed. Conclusion: Obtaining an authentic and meticulous sexual history from patients can boost risk reduction by early diagnosis and prompt treatment. Also, providing extensive laboratory assistance to aid in the diagnosis is crucial to find out the accuracy of any syndromic management approach. Treatment of gonorrhea depends on manifestations and the duration, which depends on clinical response.

Key words: *Gonorrhea, Gonorrhea diagnosis, STDs Guidelines, Gonorrhea treatment, gonococcal antimicrobial resistance.*

INTRODUCTION

Gonorrhea was first isolated by Albert Neisser who was the first to define gonococcus in 1879. Since ancient times, Arabians, Romans, and Jewish people have described gonorrhea, and each community defined its own traditional ways in diagnosing and treating this disease [1]. It is well known that sexually transmitted diseases are the most common communicable conditions affecting the health and energy of many people worldwide [2, 3]. The World Health Organization (WHO) annually generates and estimates the global burden of the four most common diseases that are transmitted sexually: trichomoniasis (*Trichomonas vaginalis*), chlamydia (*Chlamydia trachomatis*), gonorrhea (*Neisseria gonorrhoeae*), and syphilis (*Treponema pallidum*) [4, 5]. Moreover, the Centers for Disease Control and Prevention (CDC) concluded monumental publications on STDs treatment guidelines since the 1940s and provided evidence-based data on the relevance and management of gonorrhea [6].

This paper will review all aspects related to the management of the gonorrheal disease that will assist family medicine physicians in understanding effective treatment techniques, and ultimately improving patient care.

METHODOLOGY

PubMed database was used based on the CDC guidelines researches, articles, or journal articles. The keys searched in the mesh included ((“Gonorrhea “[Mesh] AND “Gonorrhea diagnosis “[Mesh] AND “STDs Guidelines “[Mesh] AND “Gonorrhea treatment “[Mesh] AND “gonococcal antimicrobial resistance”[Mesh])). In regards to the inclusion criteria, the articles were selected based on the inclusion of one of the following topics; gonorrheal disease clinical evaluation, management, and diagnosis impressions.

Review

Epidemiology

Gonococcal infections are the most reported diseases worldwide, where the community is facing considerable risks in acquiring diseases. In 2016, more than 80 million gonococcal infections were estimated by the WHO mostly seen in teenagers and adults over the age of 49. *Neisseria gonorrhoeae* is easily transmitted with an estimated probability of penile-to-vaginal transmission nearing 50% per sex act, and of vaginal-to-penile transmission approximately reaching 20% per act [7, 8].

Pathophysiology

Neisseria gonorrhoeae is a diplococcal, gram-negative microorganism; it belongs to the bacterial class beta proteobacteria and the family Neisseriaceae, and has been co-evolving with its human host for centuries. However, it can also be acquired prenatally and might cause gonococcal infection in newborns, which can cause sight-threatening purulent conjunctivitis (ophthalmia neonatorum) [9, 10]. The pathophysiology of *Neisseria gonorrhoeae* and the relative virulence of different subtypes depending on the antigenic characteristics of surface proteins. Certain subtypes might avoid serum immune responses leading to disseminated (systemic) infection [11].

Clinical Features and Diagnosis

Gonorrhea is usually symptomatic in men and most often presents as urethritis, with pain and/or burning urination experience, painful testicles, and clear urethral discharge. In contrast, women experience symptomatic gonococcal cervicitis meagerly, rare vaginal bleeding unrelated to periods that is presented with a heavily marked vaginal discharge. If symptoms develop, they often appear within 10 days of the infection. The absence of symptoms in both genders does not mean the absence of the infection, instead may mean a constant infection [12].

Laboratory tests have a more important role for early detection of the disease especially in patients with extra-genital (pharyngeal and rectal) infections, who present with vague symptoms [13]. Moreover, culture is the golden standard diagnostic test in any suspected gonorrheal infection due to its high specificity and sensitivity.

Disseminated infection is common in sexually active adults. Some of the common manifestations of disseminated infection include mild fever, skin rash, tenosynovitis, and symptoms of polyarthralgia; however, uncommon manifestations such as hepatic abscess and myocarditis have been announced in many other studies. Infection of the genital tract, remains the most common clinical presentation, primarily manifesting as endocervicitis in women and urethritis in men [11, 14]. *Neisseria gonorrhoeae* is linked to more commensal *Neisseria* species that infest areas in the pharynx [15]. The most common site of gonococcal infection in females is the endocervix (80–90%), pursued by the urethra (80%), rectum (40%), and rarely the pharynx (10–20%) [12].

Management

The global threat in antimicrobial resistance, particularly the emergence of *Neisseria gonorrhoeae* resistant to the few remaining antimicrobials recommended for treatment, further highlights the importance of investing in monitoring prevalence and incidence [16]. However, ceftriaxone remains the cornerstone in the treatment of patients infected with *Neisseria gonorrhoeae*. Moreover, the CDC recommends initial treatment of gonococcal infection with ceftriaxone and doxycycline or azithromycin. Doxycycline is usually given at a dose of 100 milligrams orally twice a day for 2 weeks; also, 250 milligrams of ceftriaxone is given intramuscularly (IM) as a single dose. Other treatment options include cefoxitin at a dose of 2 grams IM with probenecid (or 1 gram orally) as a single dose, or a third-generation parenteral cephalosporin. (Table 1) [17].

Table 1: Preferred Antibiotics by Type of Infection [17]

Anatomical site of infection	Antimicrobial Regimen, Reference
Ano-genital and pharyngeal gonorrhea	Ceftriaxone 1g IM
Ano-genital and pharyngeal gonorrhea with β lactam hypersensitivity	Ciprofloxacin 500mg PO stat (when known to be quinolone-sensitive) OR Spectinomycin 2g deep IM stat OR Azithromycin 2g PO stat (if patient is known sensitive to Azithromycin)
Pharyngeal gonorrhea with β lactam hypersensitivity	Ciprofloxacin 500mg PO stat (when known to be quinolone-sensitive) OR Azithromycin 2g PO stat (when known to be sensitive to Azithromycin)
mg: milligram, g: gram, IM: intramuscular, IV: intravenous, PO: per oral, stat: immediately	

Delayed diagnosis and thus treatment have a strong association with worse outcomes and many long-term complications especially in women such as pelvic inflammatory disease, endometritis, epididymitis, and penile edema, resulting in permanent infertility or unexpected ectopic pregnancy. However, even with timely cautious treatment, long-term complications might still occur. Patients also need to be screened for other sexually transmitted infections in 3 to 6 months. After completing the course of treatment, the family medicine clinicians re-evaluate the patient's condition after 3 months to perform retests or search for any possible relapse episodes due to suspected failures of treatment or other factors such as demographic and comorbidity conditions. More importantly, all sexual partners need to be contacted and treated accordingly [18].

Prevention counseling has been proven to be effective when provided in a nonjudgmental and empathetic manner. Moreover, family medicine physicians need to be aware of the patient's culture and developmental level. These prevention methods help in accurate identification of asymptotically infected persons and/or persons with symptoms associated with STD's who did not seek medical treatment. The family physician shall offer comprehensive educational counseling of STD and tailor the discussion of risk reduction to the individual situation [17, 18].

CONCLUSION

In conclusion, after obtaining an authentic and meticulous sexual history from his/her patient, a family physician should encourage risk reduction by early diagnosis and prompt treatment, which should be started based on clinical suspicion. In addition, affording comprehensive laboratory services for management is crucial to tailor the clinician approach according to the bacteria and their resistance status. Finally, prevention counseling following scientific methods and guidelines is an important issue that a family physician shall focus on.

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