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Prevalence of gonorrhea among adult male with urethritis in Erbil City

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Abstract

Background and objective: Gonorrhea is a sexually transmitted disease caused by *Neisseria gonorrhoeae*. The bacteria can be passed from one person to another through vaginal, oral, or anal sex. It can also be passed from mother to her baby during birth. The symptoms in adult male include a burning sensation when they urinate and a yellowish -white discharge may ooze out of the urethra. Gonorrhea can spread to epididymis causing pain and swelling in the testicular area. This can create scar tissue that can lead to infertility. The aim of this study was to determine the prevalence of gonorrhea in adult male in Erbil Governorate and the susceptibility of isolated *Neisseria* to antibiotics.

Methods: Urethral discharge obtained from adult male aged between 19-49 years were examined for the presence of *Neisseria gonorrhoeae* using direct smear gram staining and cultural technique. The susceptibility of isolated bacteria to antibiotics was tested using disc diffusion method.

Results: This study showed that the incidence of gonorrhea among 312 adult male with urethritis in Erbil city was (8.97%) while (91.03%) of patients examined had nongonococcal urethritis. The higher percentage of infection with *Neisseria gonorrhoeae* (14%) occurred among age group (19-29) years and the lower (3.48%) in the age group (39-49) years. Among the 210 unmarried patients, 26 (12.38%) had gonorrhea and 184 (87.62%) had nongonococcal urethrits. All *Neisseria gonorrhoeae* were sensitive to ceftriaxone, spectinomycin and azithromycin. The isolates showed low sensitivity (21.42%) to penicillin.

Conclusion: It seems that gonorrhea is common among symptomatic adult male. The emergence of resistance to some antibiotics is worrying. Appropriate prevention strategies should be of highest priority of the policy makers.

Keywords: Gonorrhea, Urethritis, Antibiotic susceptibility.

Introduction

Gonorrhea is a sexually transmitted infection caused by the bacterium Neisseria gonorrhoeae. It is a gram negative bacterium, fastidious, non-motile, non-spore forming diplococci, which occurs intra or extra cellular. Gonorrhea is one of the most common sexually transmitted diseases (STDs) in adults and the global gonorrhea statistics show that an estimated 62 million cases occur each year, affecting more women than men. Gonorrhea manifests as urethritis, cervicitis, prostatitis, proctitis, epididymitis and conjunctivitis. Gonococci can disseminate hematogenously from any mucosal site causing disseminated gonococcal infection which presents with arthralgias, tenosynovitis, or arthritis and rush.[1] Gonorrhea control strategies have relied on the use of highly effective and often single dose therapy administered at the time of diagnosis.[2] The appearance and subsequent increased incidence of penicillinase producing Neisseria gonorrhoeae[3] and chromosomally mediated penicillin and tetracycline resistant Neisseria gonorrhoeae[4] in the advanced countries heralded the end of an era in which gonorrhea could be confidently treated with relatively inexpensive antibiotics such as penicillin and tetracycline. The broad spectrum

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cephalosporins and later fluoroquinolones, replaced the penicillins and tetracyclines as recommended primary therapies for gonorrhea.[5] Gonococcal strains with reduced susceptibility to the fluoroquinolones have been identified in the Far East,[6] Australia,[7] Africa,[8] and the United States.[9] No attempts have been made in the last ten years to examine the incidence of gonorrhea among adult male in Kurdistan region-Iraq. Therefore, the aim of this study was to examine the prevalence of gonorrhea among adult male with urethritis in the Erbil City, the incidence of gonorrhea in relation to patient's age and marital status and the susceptibility of isolated bacteria to antibiotics.

Methods

Three hundred and twelve urethral swabs were collected from symptomatic male patients aged 19-49 years with urethritis (purulent discharge and pain or burning sensation when urinating), attending private and governmental clinics in Erbil city. The study was carried out during the period from December 2010 to December 2011. A smear for each swab was prepared and stained with Gram stain. The swabs were streaked on chocolate agar, blood agar and MacConkey agar and incubated for (24-48) hours at 37C°. Chocolate agar plates were incubated at 5-10% CO_2. Suspected colonies were identified using oxidase test, Gram reaction and API Neisseria system. The isolates identified as Neisseria gonorrhoeae were tested for their susceptibility to a number of antibiotics that included penicillin, tetracycline, ciprofloxacin, norfloxacin, ceftriaxone, spectinomycin and azithromycin. Disk diffusion method (Kirby-Bauer method) was used according to WHO guidelines for antimicrobial surveillance.[10]

Statistical analysis

Data were analyzed using the statistical package for social sciences (SPSS, version 19). Chi- square was used for testing association between categorical variables. P value < 0.05 was considered significant.

Results

Of the 312 adult male patients examined, 28 (8.97%) had gonorrhea and 284 (91.03%) were found to have nonspecific urethritis. The incidence of non specific urethritis was significantly higher than gonococcal urethritis (P < 0.001). The results are presented in Table 1. The rate of infection with Neisseria gonorrhoeae in relation to age of patients was also investigated. The results showed that the highest percentage (14%) of infection with Neisseria gonorrhoeae occurred among the age group (19-29) years and the lowest (3.48%) among the age group (40-49) years. Statistical analysis showed that the differences were significant (P < 0.001) as shown in Table 2.

Table 1: Number and percentage of adult male infected with gonorrhea and non gonococcal urethritis.

Type of Infection	Number	Percentage	p value
Gonorrhea	28	8.97%	
Non gonococcal urethritis	284	91.03%	<0.001
Total	312	100%	

Table 2: Number and percentage of adult male infected with gonorrhea in relation to age.

Age groups (Years)	Number Tested	Number of Infected	Percentage	P- Value
19-29	121	17	14%	
30-39	105	8	7.62%	P<0.001
40-49	86	3	3.48%	
Total	312	28	8.97%	

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The relation between the incidence of gonococcal and nongonococcal urethritis and patient's marital status was examined. Of 210 unmarried adults, 26 (12.38%) had gonorrhea and 184 (87.62%) had nongonococcal urethritis. The results also showed that among the 102 married adults, 2 (1.96%) had gonorrhea and 100 (98.04%) had non-gonococcal urethritis (Table 3). The susceptibility of isolates identified as Neisseria gonorrhoeae to seven antibiotics was tested. The highest percentage of sensitivity (100%) was recorded for ceftriaxone, Spectinomycin, and Azithromycin and the lowest (21.42%) for Penicillin (Table 4).

Table 3: Number and percentage of patients with gonorrhea and non-gonococcal urethritis (non specific urethritis) in relation to marital status.

Type of infection	Marital Status	
	Unmarried	Married
Gonorrhea	26 (12.38%)	2 (1.96%)
Nongonococcal urethritis	184 (87.62%)	100 (98.04%)
Total	210 (100%)	102 (100%)

Table 4: The susceptibility of Neisseria gonorrhoeae isolates to antibiotics.

Antibiotics	No. of resistant Isolates	% Resistances	No. of Sensitive Isolates	% Sensitivity
Penicillin	22	78.58%	6	21.42%
Tetracycline	20	71.43%	8	28.57%
Ciprofloxacin	5	17.86%	23	82.14%
Norfloxacin	5	17.86%	23	82.14%
Ceftriaxone	0	0	28	100%
Spectinomycin	0	0	28	100%
Azithromycin	0	0	28	100%

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Discussion

This study showed that the incidence of nongonococcal urethritis is significantly higher than gonococcal urethritis among symptomatic adult males. The results also suggest that gonorrhea is common among adult males in Erbil governorate. However, the rate of infection with Neisseria gonorrhoeae in this region seems to be lower compared to that reported for the advanced and neighboring countries. Al Sweih and colleagues[11] studied the prevalence of Chlamydia trachomatis and Neisseria gonorrhoeae infections among men with urethritis in Kuwait. They found that the rate of infection with gonorrhea was 23.9%. In another study carried out in Saudi Arabia, Madani[12] found that the rate of infection with gonorrhea was 14.2%. However the high incidence of gonorrhea infection in Saudi Arabia and Kuwait compared to this region might be due to the presence in large number of foreign workers since nonmarital sex and homosexuality are prohibited by Muslim religion. Men in the age range of 19-29 years were more vulnerable to infection. The rate of infection with Neisseria gonorrhoeae at this age group was significantly higher compared with other groups. The results also showed that the rate of infection with gonorrhea among unmarried adult male was higher compared to married adult male. Similar result was reported by Al-Sweih and colleagues.[11] This result is expected since most adult male at this age group are unmarried and they may seek illegal or commercial sex. The susceptibility of bacteria identified as Neisseria gonorrhoeae to a number of antibiotics was investigated. The results showed that more than 70% of the isolates were resistant to penicillin and tetracycline. Increased incidences of penicillinase producing Neisseria gonorrhoeae[3] and chromosomally mediated penicillin and tetracycline resistant Neisseria gonorrhoeae were also reported in the United States,[4,13] in Trinidad, Guyana and S. Vincent[14] and in Japan.[15] The appearance and subsequent increased incidence of penicillin and Tetracycline resistant *Neisseria gonorrhoeae* indicates that it can not be confidently treated with such relatively inexpensive antibiotics. The results also showed that about 18% of the isolates were resistant to fluoroquinolones (ciprofloxacin, Norfloxacin). Emergence of fluoroquinolones resistant *Neisseria gonorrhoeae* was reported by a number of investigators.[14-16] As a result of the emergence of fluoroquinolones resistant *Neisseria gonorrhoeae*, the Centers for Diseases Control and Prevention (CDC)[17] issued revised gonorrhea treatment guidelines and no longer recommends the use of fluoroquinolones for the treatment of gonorrhea. All isolated bacteria examined were sensitive to ceftriaxone, spectinomycin and azithromycin. Ceftriaxone and spectinomycin have been recognized as safe and effective options for treating gonorrhea. Azithromycin administrated orally has been found to be effective against uncomplicated urogenital gonococcal infection. However, it is not recommended as a treatment for gonorrhea because it is associated with gastrointestinal symptoms.[1]

Conclusion

The rapidly changing pattern of gonococcal antimicrobial susceptibility warrants the need for an antimicrobial susceptibility program, and periodical analysis and dissemination of susceptibility data are essential to guide clinicians and for successful sexually transmitted infections intervention programs.

Conflicts of interest

The author reports no conflicts of interest.

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