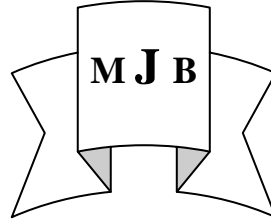


Isolation of Neisseria Gonorrhoeae from Women with and without Intrauterine Contraceptive Device

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Abstract

In this study 180 endocervical swabs were taken from women attending to Babylon Hospital for Maternity and Children in Hilla city suffering from cervicitis. They divided into two groups: 90 samples taken from IUCDs users and the other 90 sample taken from non-IUCDs users.

The study showed that the rate of infection with *N. gonorrhoeae* and *E. coli* in women with IUCDs was less than women without IUCDs and the most common age group of women with IUCD was (31-35) year. The rate of infection with Actinomyces was higher in women that used IUCDs in comparison with women that not used IUCDs, there for we can regard the IUCDs preferable to use in women exposed to infection with *N. gonorrhoeae*, as well as we should advice to use the IUCDs in women that in age group 35 year and more.

N. gonorrhoeae isolates were subjected for antibiotic susceptibility test. It was seen that all isolates were sensitive to Ceftriaxone and in lesser degree to Cefixime and also isolates showed resistance to Tetracycline.

الخلاصة

تم في هذه الدراسة اخذ ١٨٠ عينة من داخل عنق الرحم من النساء اللواتي راجعن مستشفى الولادة والاطفال في مدينة الحلة واللواتي يعانين من التهاب عنق الرحم. قسمت الى مجموعتين: ٩٠ عينة تم اخذها من النساء اللواتي يستعملن مانع الحمل اما ال ٩٠ عينة الاخرى تم اخذها من النساء اللواتي لا يستعملن المانع. اظهرت الدراسة ان نسبة الاصابة ببكتريا ال *N.gonorrhoeae* و ال *E.coli* في النساء اللواتي يستعملن المانع هي اقل من اللواتي لا يستعملن المانع وان اغلب فئة عمرية تستعمل المانع هي ما بين ٣١-٣٥ سنة. ان نسبة الاصابة بال Actinomyces هي اعلى لدى النساء اللواتي يستعملن المانع مقارنة بالنساء اللواتي لا يستعملن المانع، لذلك يمكننا الاعتبار بافضلية استعمال المانع في النساء المعرضات للاصابة ببكتريا ال *N.gonorrhoeae* بالاضافة باننا ننصح باستعمال المانع للنساء اللواتي تقع اعمارهن من ٣٥ سنة فاكثر. ببكتريا ال *N.gonorrhoeae* المعزولة اخضعت لاختبار فحص الحساسية وقد لوحظ ان جميعها حساسة للـ Ceftriaxone وبدرجة اقل للـ Cefixime. وكذلك لوحظ بانها مقاومة للـ Tetracycline.

Introduction

An Intra uterine Device (IUD) is a small, T-shaped plastic device that is wrapped in copper or contains hormones. The IUD is inserted into uterus and a plastic string tied to the end of the IUD hangs down through the cervix into the vagina. [1]

There are two types of IUDs, hormonal and copper IUDs, both types of IUD prevent fertilization of the egg by damaging or killing sperm. The IUD also affects the uterine lining (where a

fertilized egg would implant and grow) [2].

Gonorrhea is a sexually transmitted disease (STD) caused by *N. gonorrhoeae*, a bacterium that can grow and multiply easily in the warm, moist areas of the reproductive tract, including the cervix (opening to the womb), uterus (womb), and fallopian tubes (egg canals) in women, and in the urethra (urine canal) in women and men. The bacterium can also grow in the mouth, throat, eyes, and anus [3].

Gonorrhoea is spread through contact with the penis, vagina, mouth, or anus. Ejaculation does not have to occur for gonorrhoea to be transmitted or acquired. In women, the symptoms of gonorrhoea are often mild, but most women who are infected have no symptoms. Even when a woman has symptoms, they can be so non-specific as to be mistaken for a bladder or vaginal infection. The initial symptoms and signs in women include a painful or burning sensation when urinating, increased vaginal discharge, or vaginal bleeding between periods [4]. In women, gonorrhoea is a common cause of pelvic inflammatory disease (PID). The symptoms may be quite mild or can be very severe and can include abdominal pain and fever. PID can damage the fallopian tubes enough to cause infertility or increase the risk of ectopic pregnancy [5].

Patients and Methods

In this study, 180 endocervical swabs were collected from women suffering from cervicitis in Maternity and Children Hospital in Hilla city, half of them carrying copper containing Intrauterine Device. All female were screened for age and existing of IUCDs with their duration and presence of genital symptoms.

The swabs were inoculated on several culture media and traditional biochemical tests were used for final identification of bacterial isolates [6]. Some antibiotic disks were used to show the effect of them on isolated bacteria using disk diffusion method [7]. The catalase test was used to differentiate *Neisseria gonorrhoeae* from other *Neisseria* species. A positive test was defined as immediate, brisk bubbling upon dropping 30% H₂O₂ onto a bacterial colony. One hundred percent of the gonococci were catalase positive [8].

Actinomyces:

Smears were fixed by cytofix spray and stained with the modified Papnicolaou staining method. The

stained smears were routinely examined for the presence of any pathological inflammatory cellular changes. The diagnosis of inflammation was made on the presence of inflammatory cellular changes, no epithelial cellular reaction and the presence of the causative agent [6].

Results

Out of 180 patients, only 80 case had infection that diagnosed by direct examination and culture, of which (36) carrying IUCDs and (44) without. Table (1) shows the incidence of isolated bacteria in (80) patients. Only (18.2%) *N. gonorrhoea*, and (38.9) % of women with IUCDs has infection with Actinomycines, versus only (6.8)% of women with out IUCDs has Actinomycines infection, regarding the infection with *E. coli*, the results was that (16.7)%, (31.8)% in women with IUCDs versus women with out IUCDs, respectively .

Table(2) shows the distribution of age groups with duration of IUCDs in (90) Women that (37.78%) women with IUCDs was in the age group between (31-35) years and most of them were carrying IUCDs for less than 1 year (51.11%). From table (3) that show signs and symptoms of genital tract infection with IUCDs and non IUCDs users, (47.7)% of infection in non-IUCDs user were asymptomatic which was higher than in IUCDs user (25 %) (significant difference $P < 0.05$).

From table (4), results found that all *N. gonorrhoea* were sensitive to Ceftriaxone, (87.5 %) showed sensitivity to Ceftriaxone and all of them were resistant to Tetracycline.

Discussion

Results of this study revealed that the incidence of infection with *N. gonorrhoeae* was recorded in non IUCDs user but they were not isolated in the non IUCDs user and this result was in agreement with a study carried at

the Najaf city [9]. This result may be attributed to that women with IUCDs attend regular visit for gynaecological clinic and hospital for checking of IUCDs so can treat infection earlier than non user.

High rate of women using IUCDs was among age group of early thirties and least rate among (41-45) age group; this may reflected false impression that IUCDs is not the ideal contraceptive method for this age group. The distribution of microorganisms among IUCDs user and non users showed that the presence of IUCDs associated with absent of *N.gonorrhoea* while in non-user incidence is 18.2% and this may be explained by the fact that the copper containing loop with the time part of copper covering will dissolve in the secretion of uterus, and this copper containing fluid in the uterus and vagina act as germicidal solution to gonorrhoea and as the cell membrane of *N.gonorrhoea* is permeable to copper ion yet it is a lethal intracellular ion to N.G. cells [10-11].

E.coli infection was more in non IUCDs user (31.8%) than in IUCDs user (16.7%). The incidence of infection with *S.aureus*, *S.pyogenes*, *P.auroginosa*, *Micrococcus spp.* and *K.pneumonia* were not significantly different between the two groups of woman (IUCDs user and non user) and this may suggest that the study show the secretion that contain ionic copper has no inhibitory effect in growth of these microorganisms. Also our study showed that rate of Actinomyositis infection with IUCDs was (38.9%) while in non user was (6.8%) but in another study in Saudi Arabia Bassam Younes 2002 [12] found that the rate in IUCDs was (1.2%), and this may be explained by the fact that the presence of IUCDs may act as foreign body which increase the likelihood of fungal and Actinomyces infection.

Regarding vaginal discharge our study showed that pathological vaginal discharge was the most common symptom in non –IUCDs and is significantly higher than in IUCDs user and this is due to higher incidence of infection in this group of patients. Pelvic pain was the most common symptom in the IUCDs user and the type was either chronic pain (most patients) or few of them complain of dyspareunia and this is complication of IUCDs that the pain either due to genital tract infection or because of uterine contraction. Our study showed that about half of non – IUCDs user patients with genital tract infection were asymptomatic, this may reflect that those with IUCDs may be instructed about any complain that they develop at early time and they have a good looking forehead about symptom of genital tract infection so they are aware of the symptoms.

Until recently, the fluoroquinolones (ofloxacin, ciprofloxacin, levofloxacin) have been the first line oral agents for the empiric treatment of gonorrhea. The prevalence of quinolone resistant *Neisseria gonorrhoeae* (QRNG) has been rising since 2000. Ceftriaxone (available only by intravenous or intramuscular route) was named as the first line treatment for urogenital and pharyngeal disease [13].

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Table1 The incidence of infected pathogens in women with and without IUCD.

Age group (year)	Duration(year)								Total	
	<1		<2		<3		>3			
	No.	%	No.	%	No.	%	No.	%	No.	%
20-25	5	55.55	3	15	1	11.11	-	-	9	10
26-30	11	57.89	4	20	3	15.78	1	5.26	19	21.11
31-35	16	47.05	9	45	5	14.70	4	11.76	34	37.78
36-40	12	60	2	15	4	20	2	10	20	22.22
41-45	3	37.5	1	5	3	37.5	1	12.5	8	8.89
Total	46	51.11	19	21.11	17	18.89	8	8.89	90	100

P<0.05

Table2 Age groups and duration of the IUCDs in the patients.

Pathogen	IUCD		Non-IUCD users		Total	
	No.	%	No.	%	No.	%
N.gonorrhoeae	-	-	8	18.2	8	10
K. pneumoniae	3	8.3	4	9.1	6	7.5
S. aureus	5	13.9	6	13.6	12	15
S. pyogenes	3	8.3	2	4.6	3	3.8
Actinomyces spp.	14	38.9	3	6.8	19	23.7
P. aeruginosa	3	8.3	4	9.1	7	8.8
E. coli	6	16.7	14	31.8	20	25
Micrococcus spp.	2	5.6	3	6.8	5	6.2
Total	36	45	44	55	80	100

P<0.05

Table 3 Signs and symptoms of genital tract infection in women with and without IUCDs.

Symptoms	IUCD user		Non IUCD user		Total	
	No.	%	No.	%	No.	%
Vaginal discharge	4	11.1	14	31.8	18	22.5
Asymptomatic	9	25	21	47.7	30	37.5
Pelvic pain	16	44.5	5	11.4	21	26.3
Combined symptoms	7	19.4	4	9.1	11	13.7
Total	36	100	44	100	80	100

P<0.05

Table 4 Effect of some antibiotics on *N. gonorrhoeae* isolates from women without-IUCD suffering from cervicitis.

Antibiotics	Isolate no.1	Isolate no.2	Isolate no.3	Isolate no.4	Isolate no.5	Isolate no.6	Isolate no.7	Isolate no.8
Cefixime	S	S	S	S	S	S	S	R
Ceftriaxone	S	S	S	S	S	S	S	S
Tetracycline	R	R	R	R	R	R	R	R

S= Sensitive

R=Resistant