

## Bacterial Contents of Seminal Fluid of Iraqi Infertile Men

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### Abstract

This study aimed to estimate the percentage of bacterial infection among infertile males in Iraq with special reference to the predominant bacterial type. One hundred and five samples were collected from infertile patients as well as fertile individual, Seventy samples were collected from male individuals suffering from infertility either primary or secondary, as well as 35 samples were collected from fertile persons serve as a control group. All samples collected in this study were subjected to inoculation on proper media to investigate bacterio-spermia. Seminal plasma of liquefied samples were collected from all samples by centrifugation at 3000 rpm for 7min, plasma were stored frozen (-80) until use. Enzyme linked immune-sorbent assay technique (Elisa) was used to detect *Chlamydia trachomatis* IgA antibody in seminal plasma. The result of this study revealed that 39% of all samples (fertile and infertile patients) has got infected with one or more of bacterial species, *Neisseria gonorrhoea* was isolated from 51.2% of all individuals followed by *Staphylococcus aureus* which collected from 36% of samples, *E.coli* were isolated from 12% of all individuals.

**Keyword:** Bacterio-spermia

### المحتوى البكتري للسائل المنوي لمرضى العراقيين العقيمين

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## الخلاصة

تهدف هذه الدراسة الى تحديد نسبة الاصابة بالبكتريا في مجموعة الرجال العقيمين مع الاشارة الى اكثر الانواع البكتيرية انتشارا بينهم. تم جمع مئة وحمسة عينة للسائل المنوي من اشخاص عقيمين واخرين غير عقيمين, قسمت العينات الى عينات مرضية من اشخاص يعانون اما من العقم الاولي او العقم الثانوي (خمسة وسبعون عينة لكليها), استخدمت 35 عينة سائل منوي جمعت من اشخاص اصحاء كعينات سيطرة. خضعت جميع عينات الدراسة الى المعاملة البكتيرية حيث تم زرعها على الاوساط الزرعية المتخصصة لتحري عن الاصابات البكتيرية. تم الحصول على بلازما السائل المنوي لكافة عينات البحث باستخدام الطرد المركزي لمدة 7 دقائق على سرعة 3000 دورة بالقيقة. وحفظت البلازما مجمدة بدرجة (-80) لحين الاستعمال, تم التحري عن الاجسام المضادة Eliza في بلازما السائل المنوي باستخدام تقنية IgA نوع *Chlamydia trachomatis* للبكتريا اوضحت نتائج الدراسة ان نسبة 39% من عينات البحث وعينات السيطرة احتوت على نوع او اكثر من انواع البكتريا الممرضة. شكلت بكتريا السيلان اعلى نسبة بين الانواع البكتيرية المعزولة بنسبة 51.2% تليها بكتريا المكورات العنقودية بنسبة 36% في حين شكلت بكتريا القولون نسبة 12% من البكتريا المعزولة في هذه الدراسة.

كلمات مفتاحية : المحتوى الجرثومي للسائل المنوي

## Introduction

Bacterial infection in reproductive organs is one of most important causes of infertility in both males and females. Infection with different microorganism such as Chlamydia, Gonococcus, and certain other bacteria may lead to serious problems to human reproductive function (1). Infections of male genitourinary tract account for up to 15% of cases of male infertility (2), impaired of male Reproductive system that resulted from acute or chronic infection may affect the sperm cell function and the spermatogenesis process (3).

Twenty eight percent of all male reproductive system infections caused by (*Staphylococcus aureus*) as stated by (4). *Staphylococcus aureus* produces sperm immobilization factor that causing a 100% damage to human spermatozoa and its likely to be implicated in primary infertility among male (5).

On the other hand *Staphylococcus aureus* which has been reported to be commonly isolated microorganism from reproductive system of humans, can affect dramatically the motility of sperm (6). *Escherichia coli* is considered as the most frequent isolated microorganism in male patients with genital tract infection, its effect on sperm motility (7). Gonorrhoea is a common sexually transmitted disease of the reproductive system of male and female. This disease is caused by *Neisseria Gonorrhoea*,

often called Gonococcus or GC, which have fimbriae that allow bacteria to attach to epithelial cells. It also has a type of lipopolysaccharide endotoxin called lipooligosaccharide part of the outer membrane structure that enhances its pathogenicity (8).

*Chlamydia trachomatis* is an intracellular bacterium that produces a wide variety of clinical pathologies, it is common cause of infertility among both male and female as well as causing variety of disease such as urethritis, epididymitis, prostatic, *Chlamydia trachomatis* has the ability to attach to spermatozoa both on the surface and in the nucleus, yet, its role in male fertility is not clear (9).

### Material & methods

Sample collection one hundred & five semen samples were collected from apparently healthy men, and those suffering from primary and secondary infertility during the period from August- November 2017.

All samples were subjected to bacterial process; proper culture media were used to isolate bacterial growth. All samples were inoculated on MacConkey agar, blood agar, and chocolate agar ( Oxiod/ UK). Standard procedure for bacterial isolation was followed.

Identification of bacterial growth was carried out using colonial morphology & biochemical reaction. Detection of IgA antibody for *C.trachomatis*, using Eliza technique ( Human/ Germany) was done for all samples; semen plasma were collected by centrifugation of semen sample for 7min. at 3000rpm as mentioned by (10). Semen plasma were kept frozen (-80) until use.

### Result

Results of bacterial study presented here showed that 39% of all subjects participated in this study showed a positive culture upon their inoculation on proper media. Table (1) showed clearly that infertile groups ( primary and secondary) scored the highest percentage of infection (51.4%) for each, comparing to (14.2%) for control group.

Table (1):- Percentage of positive culture

<i>Type of infertility</i>	<i>No. of positive culture</i>	<i>%</i>	<i>Total</i>
<i>Primary</i>	18	51.4	35
<i>Secondary</i>	18	51.4	35
<i>Control</i>	5	14.2	35
<i>Total</i>	41	39	105

Gonococcus was isolated alone from 29% of all positive culture patients ,table (2), in addition *N.gonorrhoea* was obtained a combined by *Staph.aureus* from 21.9% of all positive cases, the effect of these bacteria on male infertility may be strength by the presence of *Staph.areus* which seems to provide *N.gonorrhoea* with either nutritions or some essential components for their virulence as indicated by (14).

On the other hand, the percentage of isolation of *E.coli* was 12% of all positive culture, 80% of these bacteria was obtained from infertile patients (primary and secondary infertile groups).

Table (2): Distribution of bacterial types among research groups:-

<i>Samples</i>	<i>Escherichia coli</i>	<i>S.aureus</i>	<i>N.Gonorrhoea</i>	<i>Gonococcus+ Staph.</i>
<i>Primary</i>	2	5	7	4
<i>Secondary</i>	2	8	3	5
<i>Control</i>	1	2	2	0
<i>Total</i>	5 ( 12%)	15 (36%)	12 ( 29.2%)	9 ( 21.9%)

As far as *chlamydial* infection is concerned, none of the samples of this study showed any sign for the presence of *C.trachomatis*, although a specific and precise antibody (IgA) was used through-out this study, the usage of IgA antibodies to *C.trachomatis* in semen was selected accurately depending on (13) who stated that IgA for *C.trachomatis* is detected more frequently

than IgG antibody in semen, Elisa testing for Chlamydia antibody indicated that IgA antibody is more persistence than other antibodies in semen.

## Discussion

The result presented here showed an approximately similar percentage for what (15) obtained when they did find that percentage of bacterial contamination of semen samples was 33%.

In this sense (2) stated that bacterial infection of semen samples in their study was 15%, yet, A local study done by (11) found that the percentage of infection among al-anbar citizens was 68% , these high percentage in the study of(1) and the present one could reflect a possibility of increasing in the percentage of urogenital tract infections.

Increase in isolation of sexually transmitted bacteria such as *N.gonorrhoea* which is the case in our study, may reflect the change in Iraqi society towards multipartnership, since it was 51.4% in the present study comparing to only 10 % scored by (1) in 2014 , the majority of Gonococcus isolated in this study was among infertile patients (46.3%) (Number of positive gonococcus/ total number of positive culture).

Infection of reproductive system may originated in urinary tract spread to genital organs through sexual intercourse , it is well known that gram negative bacteria are common cause of urinary tract infection such as *E.coli* and other members of family *Enterobacteriaceae*, as well as some gram positive bacteria such as *Staphylococcus aureus* (12). The explanation for the result of this study was based on this idea, *Staphylococcus aureus* was the second frequent isolated bacteria in our study with percentage of 36% with 31% of it was among infertile men , *S.aureus* produced a toxic material that causing embolization of spermatozoa (5), this in our view could have the ability to impair the capability of sperm to fertilize egg leading to the situation of infertility. *E.coli* on the other hand, scored only 12% among all individuals participated in this study with 10% of it isolated from infertile patients.

## Conclusion

Bacterial infection for the genitourinary tract is an important cause for male infertility since it score about 39% among study groups, Gonococcus isolated with high percentage

among both infertile groups, which again could represent the impact of changing in the lifestyle of Iraqi society.

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