

Short communication

Genital Tract Infection in Asymptomatic Infertile Men and Its Effect on Semen Quality

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Abstract

Male urogenital tract infection plays an important role in men infertility. Asymptomatic bacteriospermia has been paid attention as a major cause of male infertility. The aim of this study was to microbiological investigation of semen sample of infertile men attending to infertility clinic and evaluation of the effects of bacteriospermia on semen quality. Eighty eight infertile men were evaluated by standard bacterial culture method. Standard semen analysis was performed according to WHO guidelines. Among total cases, 35.22% (31 cases) showed at least one pathogen: 10.22% *E.coli*, 9.09% Coagulase Negative *Staphylococci* (*Saprophyticus*), 6.81% Group B *Streptococci*, 5.88% *Entrococci*, 5.68% *Candida* sp., 2.27% *Gonococci*, 2.27% *Staphylococcus aureus*, 1.13% *Klebsiella* sp. and 1.13% *Providencia* sp. There was a significant relation between the bacteriospermia and the rate of no motile and morphologically abnormal sperms ($P < 0.0001$). The quality of sperm motility was significantly decreased in contaminated semen. The percentage of morphologically normal sperm was lower. *E.coli* and *Entrococci* were the most effective agents against sperm parameters. Asymptomatic bacteriospermia has a negative effect on sperm quality. *E.coli* and *Entrococci* are the most common bacteria with negative influence on sperm motility and morphology. Moreover, presence of bacteriospermia and leukocytospermia did not correlate with each other ($P > 0.05$). It seems that leukocytospermia is a poor marker to predict bacteriospermia.

Keywords: *Bacteriospermia, Semen parameter, Genital infection, Infertile men, Iran*

Introduction

Male urogenital tract infection is one of the most important causes of male infertility, worldwide. Genital tract infection and inflammation have been associated to 8-35% of male infertility cases (1, 4). Asymptomatic bacteriospermia may play a major role (2, 5). Male accessory sex glands infection is a major risk factor in infertility (3). The significance of pathophysiology of bacteriospermia has been discussed in recent years. Some possible pathomechanisms of the development of infertility linked with infection are considered: direct effect on sperm function (motility, morphology, etc), deterioration of spermatogenesis, autoimmune processes

induced by inflammation and dysfunction of accessory sex glands (4, 5). Hence, microbiological investigation of male partners in infertile couple can be useful to detect the male urogenital tract infection, especially asymptomatic infections.

The aim of this study was to microbiological investigation of semen sample of infertile men and evaluation of the effects of bacteriospermia on semen parameters.

Materials and Methods

Semen sample of eighty-eight infertile men attending to infertility clinic (Mahdeah Hospital, Tehran) were collected in the clinic, by

masturbation, after a 3-day abstinence period. Patients should not take any antibiotic from one week before collecting a semen sample. Before collecting the sample, patients must wash their hands and genital area with soap and water. Samples were collected in sterile plastic containers used for collecting of urine sample.

Then, all of the samples were rapidly transferred to Microbiology Lab, and standard bacterial culture method (on blood agar, Mac conkey agar, chocolate agar) was performed to detect microbial agents. Cultures were incubated at 37 °C for 24-48 h. After incubation period, specific diagnostic tests, according to microbiology references, were performed to recognize the unknown colonies. In addition, standard analysis of semen parameters was performed according to World Health Organization (WHO) guidelines (6, 7).

Moreover, we used a questionnaire to ask patients about their age, the history of probable urogenital infections, etc.

Results

Among 88 cases, 35.22% (31 cases) showed at least one pathogen (Table 1). Statistically analysis of semen parameters by SPSS program showed that there was an important difference between positive cases and negative ones. The rate of non-motile and morphologically abnormal sperms was higher in positive cases, especially in *E.coli* and

Entrococci positive samples ($P<0.0001$). The presence of bacteriospermia and leukocytospermia did not correlate with each other ($P>0.05$). In addition, the highest number of positive cases belonged to 20-30 yr old patients (Table 2).

Table 1: Microbiological culture results from semen sample of infertile men

Culture	No	(%)
<i>E.coli</i>	7	7.95
Coagulase Negative <i>Staphylococci</i>	5	5.68
GroupB <i>Streptococci</i>	4	4.54
<i>Entrococci</i>	2	2.27
<i>Candida</i> sp.	1	1.14
<i>Gonococci</i>	1	1.14
<i>Staphylococcus aureus</i>	2	2.27
<i>Klebsiella</i> sp.	1	1.14
<i>E.coli</i> + <i>Providencia</i> sp.	1	1.14
<i>E.coli</i> + <i>Candida</i> sp.	1	1.14
Coagulase Negative <i>Staphylococci</i> + GroupB <i>Streptococci</i>	1	1.14
GroupB <i>Streptococci</i> + <i>Candida</i> sp.	1	1.14
GroupB <i>Streptococci</i> + <i>Gonococci</i>	1	1.14
GroupB <i>Streptococci</i> + <i>Entrococci</i>	1	1.14
<i>Entrococci</i> + <i>Candida</i> sp.	2	2.27
Negative	57	64.77
Total	88	100.00

Table 2: Classification of infertile men with/without urogenital infection according to their age

Age (yr)	Positive		Negative	
	No	(%)	No	(%)
20-30	16	39.02	25	60.98
31-40	10	27.03	27	72.97
41-50	5	50	5	50
Total	31		57	

Discussion

Male urogenital tract infection is an important cause of men infertility. The etiological role of infections in male infertility has been paid attention in recent years. Asymptomatic bacterio-

spermia may play a major role (1, 2, 5). Infectious processes may lead to deterioration of spermatogenesis, impairment of sperm function and obstruction of the seminal tract (4). As a result, microbiological investigation can reveal

a probable infection. The results of our study show that 35.22% of infertile men were positive at least for one pathogen and all patients were with out any clinical symptoms of urogenital infections. Moreover, there was an important relation between the bacteriospermia and sperm impairment. The rate of non-motile sperm and morphologically abnormal sperm was higher in positive cases ($P < 0.0001$). However, we could not find a noticeable relation between bacteriospermia and other semen parameters. *E.coli*, *Entrococci* and Coagulase Negative *Staphylococci* may play an important role in sperm impairment due to infertility, worldwide. Their significant negative effect is towards sperm motility, morphology, and vitality (8-11). In our study, *E.coli* and *Entrococci* were the main microorganisms with the most negative influence on sperm motility and morphology. Other common microorganisms, generally isolated from semen, are *Staphylococcus aureus*, *Gonococci*, *Candida* sp. and *Klebsiella* sp. (12-16).

Moreover, we could isolate 6 cases of *Group B streptococci* and one case of *Providencia* sp. which had not isolated in previous studies.

The results obtained from questionnaires show that most of the highest number of positive cases belonged to 20-30 year old patients. Generally, the risk of infertility increases by age but most of our patients were young. Therefore, because of the important role of bacteriospermia in male infertility, we should pay more attention to young men sexual health.

In view of our study, It seems that leukocytospermia is a poor marker to predict bacteriospermia ($P > 0.05$). Consequently, in presence or absence of the leukocytospermia microbiological investigation should be performed, as a routine test, to all infertile men attending to infertility clinics (8, 15).

It should be noticed that presence of urogenital tract infection and inflammation must be eradicated by antibiotic and anti-inflammation treatment, especially before using Assisted Reproductive Techniques (ART) (1). Genital bacteria can attach to sperm and some of them cannot be

removed even during the washing processes. As a result, semen may have a potential to contaminate IVF (In vitro fertilization) culture. The most common organisms isolated from IVF culture system were *E.coli* and fungi. Microbial contamination of the IVF culture system leads to unsuccessful reproduction (1, 17).

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