

The Effect of Natural Mating on the Bacterial Pollution in the Endogenous Ram

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Abstract

The current study was conducted to determine the effect of natural mating on the bacteria isolated from the glans and prepuce of the endogenous ram penis. The swabs were taken from ten endogenous rams in the animal farm of the Veterinary Medicine College in Baghdad University.

Four bacterial types were isolated before mating such as *Staphylococcus aureus*, *Streptococcus pyogenes*, *Proteus mirabilis* and *Brucella abortus*. Seven bacterial types were isolated after mating which were *Staphylococcus aureus*, *Streptococcus pyogenes*, *Proteus mirabilis*, *Brucella abortus*, *Pseudomonas aeruginosa*, *Escherichia coli* and *Listeria monocytogenes*. The result indicated that there was a clear effect of the mating on the bacterial pollution of the external genitalia of the endogenous rams.

تأثير التسفيد الطبيعي على التلوث الجرثومي في الكباش المحلية

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الخلاصة

أجريت الدراسة الحالية لتحديد تأثير التسفيد الطبيعي على التلوث الجرثومي في حشفة وقلفة قضيب الكباش المحلية. أخذت المسحات الجرثومية من عشرة كباش محلية في الحقل الحيواني التابع لكلية الطب البيطري في جامعة بغداد.

عزلت أربعة أنواع من الجراثيم قبل التسفيد وهي *Staphylococcus aureus*، *Streptococcus pyogenes*، *Proteus mirabilis* و *Brucella abortus*. في حين تم عزل سبعة أنواع من الجراثيم بعد التسفيد وهي *Staphylococcus aureus*، *Streptococcus pyogenes*، *Proteus mirabilis*، *Brucella abortus*، *Pseudomonas aeruginosa*، *Escherichia coli* و *Listeria monocytogenes*. أكدت الدراسة الحالية وجود تأثير واضح للتسفيد الطبيعي على التلوث الجرثومي للأعضاء التناسلية الخارجية للكبش المحلية.

Introduction

The infection of the uterus has been caused by several external factors which inters to the uterine lumen by mating (1, 2), or during the usage of polluted semen (3, 4), so

the male appears to be one of the important source of semen pollution (5). The bacterial pollution was considered as a serious problem in semen collection which occur through contamination of the glans penis with the prepuce (6). The bacterial pollution of the glans leads to pollution of the penis that cause infection of the female genital tract during mating (7), these pollution has a negative effect on the sperms fertilization during semen storage either from its direct poisoning effect or from the bacterial metabolism (6), this semen may acts as a carrier in spreading of genital diseases (8). For these reasons this study was designed to explain the effect of natural mating on the bacterial pollution of the ram genitalia.

Materials and Methods

The current study was done in the animal farm of the Veterinary Medicine College, in Baghdad University during May 2008. Ten healthy adult endogenous rams were used in this study. Their age was ranged from 2-2.5 years old with average weight of 35-40 kilograms. The bacterial swabs were taken from the glans and prepuce before and after mating. These swabs were used for the determination of the different types of bacteria by using several media (Blood Agar, McConkey Agar, Tryptic Soya Blood Agar and Mannitol Salt Agar). The samples were cultured and incubated for 24-48 hours at 37° temperature at aerobic and anaerobic conditions. The diagnosis of the bacterial colonies was depended on the methods mentioned by Sneath *et al.* and Quinn *et al.* (9, 10).

Results

The study showed that the possibility of isolation of seven different types of bacteria from twenty swabs taken from the glans and prepuce. The types of the bacteria were *Staphylococcus aureus*, *Streptococcus pyogenes*, *Proteus mirabilis*, *Brucella abortus*, *Pseudomonus aeruginosa*, *Esherichia coli* and *Listeria monocytogenes*. Our results revealed that there were several types of bacteria in one swab.

Staphylococcus aureus, *Streptococcus pyogenes*, *Proteus mirabilis* and *Brucella abortus* were isolated before mating in all ten swabs in a percentage of 100% to all types. Additional bacteria were isolated after mating. i.e., *Pseudomonus aeruginosa*, *Esherichia coli* and *Listeria monocytogenes*. The percentage of all isolated bacterial types was 100% after mating except *Listeria monocytogenes* which was isolated from one swab (10%).

Table (1) The types of isolated bacteria before and after mating from the external genitalia of endogenous rams

Bacterial types	Before mating			After mating		
	Number of swabs	Positive isolation	Percentage	Number of swabs	Positive isolation	Percentage
<i>Staphylococcus aureus</i>	10	10	100%	10	10	100%
<i>Streptococcus pyogenes</i>		10	100%		10	100%
<i>Proteus mirabilis</i>		10	100%		10	100%
<i>Brucella abortus</i>		10	100%		10	100%
<i>Pseudomonus aeruginosa</i>		-	-		10	100%
<i>Esherichia coli</i>		-	-		10	100%
<i>Listeria monocytogenes</i>		-	-		1	10%

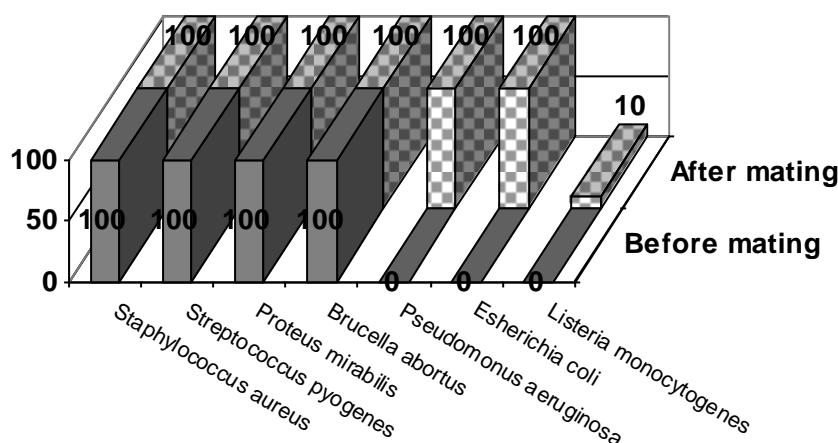


Diagram (1) The types of isolated bacteria before and after mating from the external genitalia of endogenous rams

Discussion

The study indicated that the external genitalia of the rams were polluted with several types of bacteria, this is in agreement with several workers (5, 6, 7, 8, 11). The current results showed that the bacteria isolated from male and female genitalia were similar (12-14). There were many types of bacteria which considered as a normal microflora which can proliferate during decrease the immunity of the body and cause diseases, while there were other types which regarded as a pathogenic (6).

Several studies were indicated that there was an important relationship between the number and the type of bacteria and the viability of sperm fertilization (5, 6), however (15) found that the second ejaculation contains little bacteria ten times than the first one. The employment of artificial insemination decreases the uterine inflammation (16). The bacterial pollution has a bad effect on the function of the uterine tract especially the uterine glands (17-19). The natural mating regarded as one of the sources of uterine inflammation (20).

The normal endometrial inflammatory response were triggered by antigens and physiological events (1), it is most commonly seen within a 0.5-1 hour of mating (21) and is necessary to clean the uterine lumen from dead spermatozoa and bacteria (3). Delayed uterine clearance of bacteria, fluid and debris followed mating may be caused by many different factors, these include: decrease the frequency, intensity and duration of the myometrial activity (22, 23), vascular changes in the endometrium (3), altered hormonal response (23) and altered mucus production (24).

The herein study revealed that there was a probability of presence more than one bacterial isolate in the same swab, this is in agreement with Al-Delemi (25). The *Staphylococcus aureus* released in a large amount with the semen of normal male (6) and it has less pathogenic importance in spite of its large percentage in the semen (26), so due to its large occurrence it is easy to isolate this type of bacteria with highly percentage rate before and after mating.

The isolation of *Streptococcus pyogenes* in high percentage before and after mating may be accompanied with infertility and causes abortion in the dam (6).

Proteus mirabilis was firstly isolated from the male genital organs, this refer to the presence of such microorganism with other bacterial flora in the external genital organs of the male. This bacteria accompanied with inflammatory cases in the female genital organs (27, 28) in the she - camel.

The *Brucella abortus* cause abortion in the pregnant female during the second term of pregnancy followed by retained placenta, uterine inflammation and delayed uterine involution which caused decrease of fertility (29), also it cause orchitis and epididymitis

(30). The highly percentage of isolation of such bacteria may related to the possibility to take the infection from the dams owing to the infection of the small animals during growing periods which may came back during maturation (6).

Pseudomonas aeruginosa isolated after mating in the recent study considered by Al-Delemi (25) to be one of the normal flora of the ewes. This bacteria does not cause any damage to the reproductive tract (31, 32). The presence of this bacteria in the semen refer to low fertility of the male, and there were a relationship between this bacteria and male sterility (6).

Escherichia coli which isolated after mating also considered by Al-Delemi (25) as one of normal flora of the uterine lumen, it originated from the digestive system which may transports to the urogenital tract of the female (20). *Pseudomonas aeruginosa* and *Escherichia coli* may be came from the contamination of semen with the feces of the male during mating (6).

Listeria monocytogenes was a world wide distribution in several domestic species especially ruminants. The infection of the sheep cause encephalitis, abortion and septicemia. The abortion due to this bacteria occurs in late gestation period (33).

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