

Bacterial Contamination of Prepuce in Young and Adult Rams in Salahaddin Province

Nawaf N. Daher*, Maythem A. Ismaeel and Bashar S. Noomi

Medicine, Surgery and Obstetrics Department –Veterinary College–Tikrit University.

ABSTRACT

Key words:

Bacterial contamination,
prepuce, pathogenic
bacteria, aerobic bacteria.

The present study was conducted in the animal house of the College of Veterinary Medicine/Tikrit University in the period between 1/3 to 1/4/ 2017, to identify the bacterial contamination of prepuce in young and adult local breed rams in Salahaddin Province. 56 healthy rams were used in this study divided in two groups, first group include 28 young rams about 8-12 month age, second group were 28 adult rams about 3-5 years age. The bacterial isolation ratio in young rams were: *Staphylococcus SPP* 85.7%, *Eshcherichia coli* 57.1%, *Streptococcus pyogenes* 50%, *Proteus mirabillis* 32.1% and *Pseudomonas auruginosa* 14.2%, while in adult rams were: *Staphylococcus aureus* 100%, *Eshcherichia coli* 92.8%, *Streptococcus pyogenes* 71.4%, *Proteus mirabillis* 57.1%, *Pseudomonas auruginosa* 28.5%, *Klebsiella pnemonia* 21.4% and *Brucella melitensis* 3.5%.

The present study showed presence of pathogenic bacteria in the prepuce of rams and the colonization of the bacteria were more common among adult rams than young rams and that's may be come from crevice ewes suffered from metritis, endometritis, vaginitis, or urinary system infection.

Article History

Received: 11/10/2017

Accepted: 01/04/2018

Available online:

30/12/2018

التلوث البكتيري للقفلة في الكباش اليافعة والبالغة في محافظة صلاح الدين

نواف نور الدين ظاهر وميثم عبد الاله إسماعيل وبشار صادق نومي

فرع الطب الباطني والجراحة والتوليد – كلية الطب البيطري – جامعة تكريت

الخلاصة

اجريت هذه الدراسة في البيت الحيواني التابع لكلية الطب البيطري /جامعة تكريت في الفترة من 1-3 الى 4-1 2017 لمعرفة التلوث الجرثومي للقفلة في الكباش المحلية اليافعة والبالغة في محافظة صلاح الدين. استخدمت في الدراسة 56 كبشا محليا قسمت الى مجموعتين الاولى شملت 28 كبشا يافعا تراوحت اعمارها بين 8-12 شهرا والمجموعة الثانية شملت 28 كبشا بالغا تراوحت اعمارها بين 3-5 سنوات. كانت نسبة البكتريا المعزولة من الكباش اليافعة: *Staphylococcus spp* 85.7% و *Eshcherichia coli* 57.1% و *Streptococcus pyogenes* 50% و *Proteus mirabillis* 32.1% و *Pseudomonas aeruginosa* 14.2% , بينما كانت النسبة في الكباش البالغة: *Staphylococcus aureus* 100% و *Eshcherichia coli* 92.8% و *Streptococcus pyogenes* 71.4% و *Proteus mirabillis* 57.1% و *Pseudomonas aeruginosa* 28.5% و *Klebsiella pnemonia* 21.4% و *Brucella melitensis* 3.5% .
اظهرت نتائج الدراسة الحالية وجود البكتريا الممرضة وبشكل عالي في قفلة الكباش وان قفلة الكباش البالغة كانت اعلى تلوثا من الكباش اليافعة والذي يعود السبب فيه الى تسفيد النعاج المصابة بالتهاب بطانة الرحم والرحم والمهبل اضافة لالتهابات الجهاز البولي.

الكلمات المفتاحية:

التلوث الجرثومي، القفلة،
البكتريا الممرضة، البكتريا
الهوائية.

الاستلام : 11 / 10 / 2017

القبول : 1 / 4 / 2018

* Corresponding author E-mail: Nawafvet180@gmail.com

Introduction:

During semen collection it is difficult to avoid contamination with the saprophytic bacteria of the prepuce (Akhter *et al.*, 2008). Semen collection in ram usually conducted with an artificial vagina that may be contaminated with bacteria from the surface of the penis and prepuce (Yaniz *et al.*, 2010). Aerobic bacteria are detected in almost all the collected semen samples but the various opportunistic pathogenic organisms in semen may cause reproductive disorders (Navya, 2012). Many bacterial types were isolated from the ram prepuce such as *Streptococcus pyogenes*, *Brucella abortus*, *Proteus mirabilis* and *Staphylococcus aureus* (Zaid and Al-Zubaidy, 2009). The saprophytic flora of the prepuce in healthy semen donors comprises numerous bacterial species which may become associated with the semen at ejaculation and during collection (Navya, 2012), which cause harmful effect on motility, morphology and various semen quality parameters (Najee, *et al.*, 2012) and might compromise semen quality during storage that in turn impair sperm function and reduces its fertilization capability (Harada and Asai, 2010), and infected the female's reproductive tract during insemination (Badry *et al.*, 2001).

The aim of this study was to determine the bacterial contamination of prepuce in adult and young local breed rams.

Material and methods:

Experimental animals: 56 local breed rams were used in this study, kept in the animal house of Veterinary Medicine College / Tikrit University during April 2017. The animals divided into two groups, the first group consist from 28 young rams (8-12 month age) while the second consist from 28 adult rams (3-5 years age).

Samples collection: swabs were taken from the glans and prepuce of each animal

Bacterial Isolation and identification: Each swab cultivated in trypton soya broth (Himedia- India), and incubation at 37°C for 24 h. for reactivation of bacteria. Sub culturing from trypton soya broth to manitol salt agar macConkey agar , blood agar and chocolate agar then incubated aerobically at 37°C for 24 h. Gram stain and biochemical tests applied according to (Quinen *et al.*, 2002)

Results:

Isolation from young rams : Table (1) show that from 28 sample only 4 case were negative for bacterial isolation, while 24 sample were positive for bacterial culture, the isolation ratio were: *Staphylococcus SPP* 85.7%, *Esherichia coli* 57.1%, *Streptococcus pyogenes* 50%, *Proteus mirabillis* 32.1% and *Pseudomonas aeruginosa* 14.2%. Six samples give more than one type of bacterial isolate with ratio of 21.4%.

Table (1): Bacterial species isolated from young rams glans and prepuce.

No	Bacterial type	No. of isolate	Ratio
1	<i>Staphylococcus spp</i>	24	85.7%
2	<i>Esherichia coli</i>	16	57.1%
3	<i>Streptococcus pyogenes</i>	14	50%
4	<i>Proteus mirabillis</i>	9	32.1%
5	<i>Pseudomonas aeruginosa</i>	4	14.2%

Isolation from adult rams: From table 2 it's clear that the staphylococcus aureus isolated from all animals 100%, *Esherichia coli* 92.8%, *Streptococcus pyogenes* 71.4%, *Proteus mirabillis* 57.1%, *Pseudomonas aeruginosa* 28.5%, *Klebsiella pnemonia* 21.4% and *Brucella melitensis* 3.5%. 15 sample give more than one type of bacteria isolate with ratio of 53.5%.

Table (2): Type, no. and ratio of bacterial isolated from adult ram glans and prepuce.

No	Bacterial type	No. of isolate	Ratio
1	<i>Staphylococcus aureus</i>	28	100%
2	<i>Esherichia coli</i>	26	92.8%
3	<i>Streptococcus pyogenes</i>	16	71.4%
4	<i>Proteus mirabillis</i>	10	57.1%
5	<i>Pseudomonas aeruginosa</i>	8	28.5%
6	<i>Klebsiella pnemonia</i>	6	21.4%
7	<i>Brucella melitensis</i>	1	3.5%

Discussion:

The present study indicated that the external genitalia of the rams were polluted with several types of bacteria. This agreed with (Zalzala, 1989; Al-Badry, *et al.*, 2001; Zaid and Al-Zubaidy, 2009) and the source of these polluted may come from outer skin, hair environmental (Troedsson, *et al.*, 2001) and local infections in the urinary tract (Navya, 2012). The current study revealed that type and ratio of bacterial isolation in adult ram is more than in the young, that due to infection reach from infected female during coitus (Wahid, *et al.*, 2003), same result were recorded by (Navya, 2012) who found the lowest bacterial numbers were found in the youngest age groups, while the greatest numbers of bacteria were found in the oldest group and this may attributed to the deeper epithelial crypts in the prepuce and penis of the older male.

The present study indicated that 5 bacterial types isolate from both young and adult ram. That's may be due to that these type present as normal flora and it may come from the contact of outer oriphice of prepuce with contaminated floor during the lie down of animals on the prepuce (Jansen and Wool-Board, 1983). The current study demonstrated that the high ratio of *Staphylococcus aureus* isolated from the prepuce of each group (Table 1, 2), these result are compatible with study of (Ling and Ruby, 1978) who found that *Staphylococcus aureus* was the most frequently aerobic microorganisms which isolated from the prepuce of normal adult male dogs. Mohamed *et al.* (2016) suggested that the *Staphylococcus aureus* is the most common member of normal microflora in sheep skin and it may consider the main cause for high ratio of isolate *Staphylococcus aureus* from the prepuce in rams. Same result was recorded by Shallali *et al.* (2001) who isolated same bacteria from the vagina of healthy ewes and the *Staphylococcus aureus* was isolated in a highest ratio than other bacteria which may explain the transmission of these bacteria through the natural cervices.

In spite of the most type of bacteria that polluted the prepuce are non-pathogenic but under appropriate environmental conditions some of these bacteria may be have as opportunistic pathogens and represent a significant risk to inseminated females like vaginitis, cervicitis and metritis (Wierzbowski, 1981). As well as the presence of *Brucella* in prepuce lead to transmitted it to the female during service and may lead to abortion, retained fetal membrane, metritis decreased fertility although the epididymitis and orchitis in male (Quinn *et al.*, 2002).

In conclusion, the present study illustrated presence of pathogenic bacteria in the prepuce of rams, that's may be come from services ewes infected with metritis, endometritis, vaginitis, or urinary system infection, and these rams which have high ratio of contamination may spray the pathogenic bacteria to others females during natural cervices.

References:

- Akhter, S.; Ansari, M. S.; Andrabi, S. M. H.; Ullah, N. and Qayyum, M. (2008). Effect of antibiotic in extender on bacterial and spermatozoal quality of cooled buffalo (*bubalus bubalis*) bull semen. *Reprod. Domest. Anim.*, 43: 272-278.
- Al-Badry, K. I.; Al-Jobori, A. H. and Ibrahim, F. F. (2001). Influence of tylosin, gentamicin and lincomycin combination on semen characteristics, bacterial and mycoplasma contaminants of Friesian bull semen. *Iraqi J. Microbiol.*, 13 (3): 18-28.
- Harada K. and Asai T. (2010) Role of antimicrobial selective pressure and secondary factors on antimicrobial resistance prevalence in *Escherichia coli* from food-producing animals in Japan. *J. Biomed. Biotechnol.*, 10: 1155-1159.
- Jansen, B. C. and Wool-Board, S. A. (1983) The Epidemiology of Bacterial Infection of the Genitalia in Rams. *Onderstepoort J. Vet. Res.*, 50: 275-282.
- Ling, G. V. and Ruby, A. L. (1978). Aerobic bacterial flora of the prepuce, urethra, and vagina of normal adult dogs. *Am. J. Vet. Res.* Apr; 39 (4): 695-8.
- Mohamed, H. A. A.; Van Klink, Ed. G. M. and ElHassan, S. M. (2016). Damage caused by spoilage bacteria to the structure of cattle hides and sheep skins. *Int. J. Anim. Heal. and Liv. Prod. Research.* 2 (1):39-56.
- Najee, H. B.; Al-Shawii, A. M. and Abd-Al Rahman, L. Y. (2012) Bacterial contamination of imported bulls frozen semen. *Al-Anbar J Vet Sci.* 5: 1999- 6527.
- Navya, M. (2012). Bacterial load in the neat, extended and frozen bull semen and its antibiogram. Msc. Bangalore, Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar.
- Quinn, P. J.; Markey, B. K.; Carter, M. E.; Donnelly, W. J. C. and Leonard, F. C. (2002). *Veterinary Microbiology and Microbial Disease*. 1st ed. Blackwell Science Ltd; London. p. 163-167.
- Shallali, A. A; Hussein, A. M.; Salih, M. M. and Dafalla, E. A. (2001). A Preliminary Report on Bacteria isolated from the Female Genital Tract of Sudanese Sheep and Goats. *The Sudan J. Vet. Res.* 17: 55-63
- Troedsson, M. H.; Loiset, K.; Alghamdi, A. M.; Dahms, B. and Crabo, B. G. (2001). Interaction between equine semen and the endometrium: the inflammatory response to semen. *Ani. Rep. Sci.* 68: 273-278.
- Wahid, Z.; Hussien, T. and Abdul Wadood, E. (2003). Bacterial causes of endometritis in cattle. *Basrah J. Vete. Res.*, 1(1, 2): 23-32.
- Wierzbowski, S., (1981). Bull semen opportunistic pathogen and ubiquitous microflora pp 21-28. In: disease control in semen and embryos. FAO Animal Production and Health paper. 23. Food and Agriculture Organisation of the United Nations, Rome.
- Yaniz, J. L.; Marco-Aguado, M. A.; Mateos, J. A. and Santolaria, P. (2010). Bacterial contamination of ram semen, antibiotic sensitivities, and effects on sperm quality during storage at 15°C. *Anim Reprod Sci.* 1: 142- 149.
- Zaid, N. W. and Al-Zubaidy, I. A. (2009). The Effect of Natural Mating on the Bacterial Pollution in the Endogenous Ram. *Al- Anbar J. Vet. Sci.*, 2 (1): 31-35.
- Zalzala, S. J. (1989). Bacterial contamination in semen of bulls in artificial insemination centre. Master science thesis–veterinary medicine college – Baghdad University.