

AEROBIC BACTERIA ASSOCIATED WITH ENDOMETERITIS OF SLAUGHTERED SHEEP AND GOATS IN KAFR EL-SHEIKH GOVERNORATE

T. H. S. Badier and G.. I . Mazyad

Vet. Lab., Animal Health Research Institute

ABSTRACT

This study was done at Kafr El-Sheikh Governorate on uteri of both slaughtered sheep (100) and goats (100) in the abattoir during December 2008 and January 2009 and post-mortem was operated to examine these obtained uteri, those divided into two groups (non purulent and purulent uteri) the uterine swabs were collected from (40) sheep and (40) goats and cultivation on specific and selective media to isolate the aerobic bacterial microorganisms associated with endometritis of these animals. The incidence of non-purulent and purulent uteri were 85% and 15% in sheep and 80% and 20% in goats, respectively.

Also, this study illustrated that the incidence of bacterial isolates sheep (40) and goats (40) which had non purulent and purulent uteri was 62.5%, 37.5% and, 50% and 50%, respectively.

*The incidence of bacterial strains was 50% (*Staphylococcus aureus*), 12.5% (*Streptococcus viridans*), 2.5 (*Campylobacter fetus*), 50% (*Escherichia coli*), 2.5% (*Proteus vulgaris*) 5% (*Pseudomonas aeruginosa*) in sheep, but in goats this incidence was 25% (*Staph. aureus*), 12.5% (*Strept. viridans*), 12.5% (*Campylobacter fetus*), 37.5% (*E. coli*) and 12.5% (*Proteus vulgaris*).*

The rate of the isolated bacterial strains was 22.99% (*Staph. aureus*), 7.46% (*Strept. viridans*), 14.93% (*Campylobacter fetus*), 22.39% (*E. coli*), 11.40% (*Proteus vulgaris*) and 2.99% (*Pseudomonas aeruginosa*) in non purulent uteri sheep while in purulent uteri of sheep this rate was 7.46% (*Staph. aureus*), 0% (*Strept. viridans*) 0% (*Campylobacter fetus*), 7.46% (*E. coli*), 2.99% (*Proteus vulgaris*) and 0% (*Ps. aeruginosa*). Also, this rate in goats was 20% (*Staph. aureus*), 12.5% (*Strept. viridans*), 12.5% (*Campylobacter fetus*), 25% (*E. coli*), 10% (*Proteus vulgaris*), and 0% (*Ps. aeruginosa*) in non purulent uteri while it was 5% (*Staph. aureus*) 0% (*Strept. viridans*), 0% [*Campylobacter fetus*], 12.5 (*E. coli*), 2.5% (*Proteus vulgaris*) and 0% (*Ps. aeruginosa*).

This study revealed that all isolates of *Staph. aureus* and *Strept. viridans* were more sensitive to erythromycin, chloromphenicol, gentamycin, streptomycin, neomycin, oxytetracyclin and enrofloxacin, but *campylobacter fetus* isolates were sensitive to gentamycin, streptomycin and enrofloxacin, while, isolates of *E. coli* and *Proteus vulgaris* were only sensitive to gentamycin and enrofloxacin. On the other hand, the isolates of *Ps. aeruginosa* were only sensitive to enrofloxacin and resistant to remained used antibiotics in this work.

INTRODUCTION

The small ruminant animals (sheep and goats) are considered as a source of protein and milk for human consumption and wool production used by human.

Ewes and goats should have complete normal genital organs useful for production of off springs (***Blood and Handerson, 1974***).

Bacterial infections of sheep and goats uteri cause to endometritis with several types of inflammation and lead to non pregnant and dead fetus (*Blood and Handreson, 1974, Martin, and Aiken, 2000 and Donkin and Boyazogiu, 2004*).

The bacterial microorganisms are *Staphylococcus* spp., *Streptococcus* spp. *Corynebacterium* spp., *E. coli*, *Pseudomonas aureuginosa*, *Proteus* spp., *Campylobacter fetus*, *Khebsiella* and *Enterobacter cloacae* which were reported as bacterial causes of endometritis of sheep and goats (*Nizamani et al., 2002 and Sokkar et al., 2007*).

So this study was done to isolate various bacterial agents from uterine swab samples of sheep and goats to be identified, and recorded its incidence and rate.

MATERIAL AND METHODS

This study was carried on uteri of slaughtered sheep (100) and goats (100) in abattoirs in Kafr El-Sheikh governorate during December 2008 and January, 2009.

These uteri were taken as soon as possible on ice box to laboratory under aseptic condition to decide the presence of inflammation and divided into two groups (non purulent, and purulent uteri) as shown in Tables (1, 2, 3).

Then take swab from each uterus under aseptic condition. These samples were cultivated onto specific media (peptone water, Loffler's blood agar, nutrient agar, baird barker, McConeky agar and Citramide agar media) and incubated at 37°C for 24 hours (*Bailey and Scott, 1974*).

Morphological character of stained films were examined by microscope (*Cruickshank et al., 1975*).

The obtained bacterial isolates were classified and confirmed by biochemical and serological tests (*Cruickshank et al., 1975 and Bailey and Soctt 1974*).

The agglutination plate test (antiserum was obtained from Vaccine and Serum Research Institute, Abbasia) applied to report *Staphylococcus* spp. and biochemical tests (urease, triple sugar, indole, vogus-prouskaur test) were done (*Baily and Scott, 1974*).

Sensitivity tests for some obtained bacterial strains were applied by using method of antibiograms to clear their sensitivity to gentamycin, streptomycin, chloramphenicol, neomycin, oxytetracyclin, (*Bailey and Scott, 1974 and Ernest et al., 1976*).

Table (1): The post mortem examination of ewe's uterus.

Post mortem examination of uteri	Findings observation	
	No	%
Non purulent uterus	85	85
Purulent uterus	15	15
Total	100	100

Table (2): The post mortem examination of goat's uterus.

Post mortem examination of uteri	Findings observation	
	No	%
Non purulent uterus	80	80
Purulent uterus	20	20
Total	100	100

Table (3): The post mortem examination of uterus from sheep and goats which used for bacteriological isolation.

Post mortem examination of uterus	Sheep		Goat	
	No.	%	No.	%
Non purulent	25	62.5	20	50
Purulent	15	37.5	20	50
Total	40	100	40	100

RESULTS

Table (4): The incidence of isolated bacterial strains from sheep (40).

Post mortem examination of uteri	Total	Bacterial isolates											
		<i>Staph. aureus</i>		<i>Strept. viridans</i>		<i>Campylobacter fetus</i>		<i>E. coli</i>		<i>Proteus vulgaris</i>		<i>Ps. aeruginosa</i>	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Non purulent	25	15	37.5	5	12.5	10	25	15	37.5	8	20	2	5
Purulent	15	5	12.5	0	0	0	0	5	12.5	2	5	0	0
Total	40	20	50	5	12.5	10	25	20	50	10	2.5	2	5

This Table (4) illustrate that the number and incidence of isolated bacterial strains from non purulent uteri of sheep was 15 (37.5%) *Staph. aureus*, 5 (12.5%) *Strept. viridans*, 10 (25%) *Campylobacter fetus*, 15 (37.5%) *E. coli*, 8 (20%) *Proteus vulgaris* and 2 (5%) *Ps. aeruginosa*, while, they were 5 (12.5%) *Staph. aureus*, 0 (0%) *Strept. viridans*, 0 (0%) *Campylobacter fetus*, 5 (12.5%) *E. coli*, 2 (5%) *Proteus vulgaris* and 0 (%) *Ps. aeruginosa* which isolated from purulent uteri of sheep.

Table (5): The rate of isolated bacterial strains from uterus of sheep.

Microorganisms	Total		Non Purulent uterus		Purulent uterus	
	No.	%	No.	%	No.	%
<i>Staph. aureus</i>	20	29.85	15	22.39	5	7.46
<i>Strept. viridans</i>	5	7.46	5	7.46	0	0
<i>Campylobacter fetus</i>	10	14.93	10	14.93	0	0
<i>E. coli</i>	20	29.85	15	22.39	5	7.46
<i>Proteus vulgaris</i>	10	14.93	8	11.40	2	2.99
<i>Ps. aeruginosa</i>	2	2.98	2	2.99	0	0
Total	67	100	55	82.09	12	17.91

Table (5) revealed that the number and rate of isolated bacterial strains 15 (22.39%) *Staph. aureus*, 5 (7.46%) (*Strept. viridans*, 10 (14.93%) *Campylobacter fetus*, 15 (22.39%), *E. coli*, 8 (11.40%) *Proteus vulgaris*, and 2 (2.99%), *Ps. aeruginosa* from non Purulent uteri of sheep, while, they 5 (7.46%) *Staph. aureus*, 0(0%) *Strept. viridans*, 0 (0%) (*Campylobacter fetus*), 5 (7.46%), *E. coli*, 2 (2.99%) *Proteus vulgaris* and 0 (0%) *Ps. aeruginosa* from purulent uteri of sheep.

Table (6): The incidence of isolated bacterial strains from uteri of goats (40).

Post mortem examination of uteri	Total	Bacterial isolates											
		<i>Staph. aureus</i>		<i>Strept. viridans</i>		<i>Campylobacter fetus</i>		<i>E. coli</i>		<i>Proteus vulgaris</i>		<i>Ps. Aeruginosa</i>	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Non purulent	32	8	20	5	12.5	5	12.5	10	25	4	10	0	0
Purulent	8	2	5	0	0	0	0	5	12.5	1	2.5	0	0
Total	40	10	25	5	12.5	5	12.5	15	37.5	5	12.5	0	0

Table (6) cleared that the number and incidence of isolated bacterial strains from uteri of goats was 8 (20%) *Staph. aureus*, 5 (12.5%) *Strept. viridans*, 5 (12.5%) *Campylobacter fetus*, 10 (25%), *E. coli*, 4 (10%) *Proteus vulgaris* and 0 (0%) *Ps. aeruginosa* (non purulent uteri) while, in Purulent uteri, they were 2 (5%) *Staph. aureus*, 0 (0%) *Strept. viridans*, 0 (0%) *Campylobacter fetus*, 5 (12.5%) *E. coli*, 1 (2.5%) *Proteus vulgaris* and 0 (0%) *Ps. aeruginosa*.

Table (7): The rate of isolated bacterial strains from uteri of goat.

Microorganisms	Total		Non Purulent uterus		Purulent uterus	
	No.	%	No.	%	No.	%
<i>Staph. aureus</i>	10	25.00	8	20	2	5
<i>Strept. viridans</i>	5	12.50	5	12.5	0	0
<i>Campylobacter fetus</i>	5	12.50	5	12.5	0	0
<i>E. coli</i>	15	37.50	10	25	5	12.5
<i>Proteus vulgaris</i>	5	12.50	4	10	1	2.5
<i>Ps. aeruginosa</i>	0	0.00	0	0	0	0
Total	40	100	32	80	8	20

Table (7) revealed that the number and rate of the isolated bacterial strains from uterus goat (non purulent and purulent uteri) was 8 (20%) and 2 (5%) *Staph. aureus*, 5 (12.5%) and 0 (0%) *Strept. viridans*, 5 (12.5%) and 0 (0%) *Campylobacter fetus*, 10 (25%) and 5 (12.5%) *E. coli*, 4 (10%) and 1 (2.5%) *Proteus vulgaris*, and *Ps. aeruginosa* strains were not isolated respectively.

Table (8): Results of sensitivity test.

Microorganisms	Erythromycine	Chloromphenicol	Gentamycin	Streptomycine	Neomycine	Oxytetracycline	Enerofloxacin
<i>Staph. aureus</i>	+	+	+	+	+	+	+
<i>Strept. viridans</i>	+	+	+	+	+	+	+
<i>Campylobacter fetus</i>	-	-	+	+	-	-	+
<i>E. coli</i>	-	-	+	-	-	-	+
<i>Proteus vulgaris</i>	-	-	+	-	-	-	+
<i>Ps. aeruginosa</i>	-	-	-	-	-	-	+

+ Sensitive

- = Resistant

Table (8) revealed that *Staph. aureus* and *Strept. viridans* were sensitive to chloramphenicol, neomycine, oxytetracycline, streptomycin, erythromycine, and enrofloxacin. *Proteus vulgaris* and *E. coli* were sensitive to gentamycin and enrofloxacin, *Campylobacter fetus* were sensitive to streptomycine, gentamycine and enrofloxacin while, *Ps. aeruginosa* were sensitive to enrofloxacin only.

DISCUSSION

This study revealed that the post mortem examination of uteri from slaughtered 100 sheep and 100 goats in an abattoir appeared 85% and 15% and 80% and 20% non purulent and purulent uteri, respectively, this incidence of purulent uteri is due to non correct treatment of these animals, this agree with **Mahajm and Kotoch (1997), Katoch et al. (1997) and Sokkar et al. (1980)**.

This study showed that the incidence of *Staph. aureus* (37.5%), *Strept. viridans* (12.5%), *Campylobacter fetus* (2.5%), *E. coli* (37.5%), *Proteus vulgaris* (20%) and *Ps. aeruginosa* (5%), and *Staph. aureus* (12.5%), *E. coli* (12.5%), *Proteus vulgaris* (5%) in with non purulent and purulent uteri of sheep, respectively. This finding were agreed the results which reported by Sokkar (1980), while, in goats the incidence of *Staph. aureus* (25%), *Strept. viridans* (12.5%), *Campylobacter fetus* (12.5%), *E. coli* (37.5%) and *Proteus vulgaris* (12.5%). These obtained results agreed with **Sokkar et al. (2007)**.

This study revealed that the rate of isolated bacterial micro-organism was 22.39% (*Staph. aureus*), 7.46% (*Strept. viridans*), 14.93% (*Campylobacter fetus*), 22.39% (*E. coli*), 11.40% (*Proteus vulgaris*) and 2.99% (*Ps. aeruginosa*) and (7.46% (*Staph. aureus*), 7.46% (*E. coli*) and 2.99% (*Proteus vuglaris*) in non purulent and purulent uteri of sheep. While, in goats, it was 20% (*Staph. aureus*), 12.5% (*Strept. virdans*),

12.5% (*Campylobacter fetus*) 25% (*E. coli*) and 10% (*Proteus vulgaris*), and 5% (*Staph. aureus*), 1.5% (*E. coli*) and 2.5% (*Proteus vulgaris*) from non purulent and purulent uteri, respectively, these obtained results were smaller with other results which reported by *Nizamani et al. (2002)* and *Azew et al. (2003)*.

This study investigated that all *Staph. aureus* and *Strept. viridans* strains were sensitive to Erythromycin, chloramphenicol, gentamycin, streptomycin, neomycin, oxytetracycline and enrofloxacin, while, campylobacter fetus strains were sensitive only to gentamycin, streptomycin and enrofloxacin, *E. coli* strains and *Proteus vulgaris* strains were only sensitive to gentamycin and enrofloxacin, while, *Pseudomonas aeruginosa* strain were only sensitive to enrofloxacin. These results of sensitivity test of used antibiotics except enrofloxacin agreed with the results obtained by *Shataiov et al. (1985)*.

Most isolated bacterial microorganisms in this study were resistant to most of used antibiogram due to plasmid and extrachromosomal resistance factor, this point cleared by *Bailey and Scott (1974)*.

REFERENCES

- *Azew, O.; Al-Baual, S.M.T. and Zenad, M.M. (2003)*. Bacteriological and histopathological associated with dystocia in Awassi ewes. Iraqi Journal of Veterinary Sciences 17(1): 154-191.
- *Bailey, W.R. and Scott, E.G. (1974)*. Diagnostic microbiology the 4th edition, The C.V. Mosoby Company.
- *Blood, D.C. and Henderson, JA. (1974)*. Veterinary medicine 4th edition, the English Language Book, Society and Ballere Tindall.
- *Cruickshank, R.; Dugina, J.P.; Masmino, B.P. and Swain, R.H.A. (1975)*. Medical microbiology. The practice of medical microbiology. 12th Ed., Vol. 11. Churchill Living Stone Edinburgh, London and New York.

-
-
- **Donkin, E.F. and Boyazogiu, P.A. (2004).** Diseases and mortality of adult goats in a south African milk goats herd. South African Journal of Animal Science, 39(1): 254-257.
 - **Ernest Jawetz, Joseph, L. Melnick and Edward A. Adelberg (1976).** Review of medical microbiology. 12th. edition, Lance Medical Publications, Losalton, California.
 - **Katoch, R.C.; Mandeep-Shanna; Batta M.K.; Joshi, V.B.; Asrani, R.K.; Nagal, K.B.(1997).** Investigations on endometritis among sheep and goats. Indian-Veterinary-Journal, 74(6): 365-367.
 - **Mahajan, A.K. and Katoch, R.C. (1997).** Aerobic microbial flora association with endometritis in sheep and goats. Indian Journal of Animal Sciences, 87(4): 290-291.
 - **Martin, W.B. and Aiken, I.D. (2000).** Diseases of sheep 3 edition, the Black well Science.
 - **Nizamani, A.W.; Khan, T.S.; Siddinui, L.A.; Rind, R.; Laghan, H.H. (2002).** Studies of bacteria flora of uteri of slaughtered sheep. Journal of Animal and Veterinary Advances 1(2): 89-91.
 - **Shataiov, V.F.; Neknaev, E.E.; Knrapkovaskaya, L.P. (1985).** Drug sensitivity of bacteria from the genital system of animals. Veterinariya-Moscow, (9): 46-47.
 - **Sokkar, S.M.; Ahmed, Y.F.; Desouky, H.M. and Soror, A.M.N. (2007).** Pathological studies on sheep endometritis. Vet. Med. J. Giza, 55 (1): 131-144.
 - **Sokkar, S.M.; Kubba, M.A. and Aungaloy, E. (1980).** Studies on natural and experimental endometritis in ewes. Veterinary Pathology, 17(8): 893-898.

البكتيريا الهوائية المصاحبة للاتهابات الرحمية للأغنام والماعز المذبوحة بمحافظة كفرالشيخ

طلعت حامد شعيشع بدير - جمال الدين ابراهيم مزيد

معمل بيطرى كفرالشيخ - معهد بحوث صحة الحيوان - الدقى

أجريت هذه الدراسة بمحافظة كفرالشيخ على إناث الماعز والأغنام (100 رأس غنم و 100 رأس من الماعز) وهذه الحيوانات ذبحت داخل السلخانة فى الفترة من أول ديسمبر 2008 حتى نهاية يناير 2009 وتم فحص أرحام هذه الحيوانات تم تقسيمهم الى مجموعتين ارحام ليس بها صديد بنسبة 85% ، 80% وأرحام بها صديد بنسبة 15% و 20% بالنسبة للغنم والماعز على التوالى وتم أخذ عينات من عدد 40 غنم وعدد 40 ماعز والتي تشمل العينات المأخوذة من أرحام الغنم والماعز التى بها صديد وكانت النسبة 62.9% ، 37.5% من أرحام ليس بها صديد وأرحام بها صديد على التوالى بالنسبة للغنم ، أما بالنسبة للماعز كانت العينة 50% ، 50% من أرحام الماعز ليس بها صديد وأخرى بها صديد على التوالى.

نسبة العترات البكتيرية مقرونة لعدد 40 رأس من أنثى الغنم 50% ميكروب عنقودى ذهبى، 12.5% ميكروب سبى فيريدانس، 12.5% ميكروب الكامبيلوباكتر فيتس و 50% ميكروب قولونىة 25% بروتيس فيرجالس و 5% ميكروب السيدوموناس اريجنوزا بالنسبة للغنم ولكن النسبة كانت فى الماعز هى 25% لميكروب العنقودى الذهبى و 12.5% ميكروب استربتوكوكس فيردانس و 12% كملوبكتر فيتس و 37.5% ميكروب قولونى و 12.5% ميكروب البروتيس فولجارس.

نسبة عزل العترات البكتيرية كانت 22.99% (العنقودى الذهبى) و 7.46% (استربتوكوكس فيردانس) و 14.93% (كامبيلوباكتر فيتس) و 22.39% (القولونى الميكروب) و 11.40% (بروتيس فولجارس) و 2.99% (سيدوموناس اريجنوزا) بالنسبة للعينات المأخوذة من أرحام الأغنام التى لا يوجد بها صديد بينما كانت النسبة لهذه الميكروبات المعزولة من العينات المأخوذة من أرحام الأغنام التى بها صديد كالتالى: 7.46% (عنقودى ذهبى) ولم يتمكن من عزل ميكروب السبى فيردانس وميكروب كامبيلوباكتر فيتس ولم يعزل ميكروب السيدوموناس اريجنوزا وكانت النسبة للميكروب القولونى (7.46%) وميكروب البروتيس فولجارس (2.99%). أيضا كانت نسبة عزل الميكروبات البكتيرية المعزولة من أرحام الماعز هى كالتالى:

أ- النسبة المعزولة من أرحام الماعز التي ليس بها صديد هي 20% (العنقودي الذهبى) و 12.5% (السبحى فريدانس) و 12.5% (كامبيلوبكتر فيتس) و 25% (القولونى) و 10% (بروتيس فولجارس) ولم يمكن عزل ميكروب السيدوموناس اريجنوزا.

ب- النسبة المعزولة من أرحام الماعز والتي بها صديد وهي 5% (العنقودي الذهبى) و 12.5% (القولونى) و 2.5% (بروتيس فولجارس) ولم نتمكن من عزل ميكروب السيدوموناس اريجنوزا والكامبيلوبكتر فيتس والسبحى فريدانس.

أضافت هذه الدراسات أن كل من المعزولات الأتي: الميكروب العنقودي الذهبى والسبحى فريدانس كانت حساسة لكل من مضاد الإرترومايسين وكلورامفينكول وجنتاميسين واستربتومايسين ونيومايسين وأوكسىتتراسيكلين والانروفلوكساسين. بينما المعزولات من الميكروب كامبيلوبكتر فيتس كانت حساسة لكل من وجنتاميسين واستربتومايسين وانروفلوكساسين ولكن الميكروب القولونى والبروتيس فولجارس كانت حساسة فقط لمضاد جنتاميسين والأنروفلوكساسين وأوضحت هذه الدراسة أيضا أن المعزول من ميكروب السيدوموناس اريجنوزا كانت حساسة فقط لمضاد الانروفلوكساسين ومقاوم لبقية المضادات المستخدمة.