Assiut University web-site: www.aun.edu.eg

STUDIES ON RENAL BACTERIAL AFFECTIONS IN SHEEP IN MATROUH GOVERNORATE

JAKLEEN HALIM TWAFIK
Researsher In Animal Health Researsh Institut Assiut (ARC)

Received: 9 July 2023; **Accepted:** 10 August 2023

ABSTRACT

Urine and tissues samples were collected for bacteriological examination from 50 apparently diseased sheep of different ages and sexes which were clinically suspected suffering from renal infection and from slaughtered animals. We were collected samples from many locations at Matrouh Governorate and sent for laboratory. Post mortem examination of the renal system of affected cases revealed different investigations. kidneys appeared swollen, its surface was mottled red. Some kidneys were pale and greatly enlarged. Cut section of the kidney showed areas of hemorrhage and abscess formation. The results indicated that 80% (40) sheep were positive for bacterial infection however 10 show negative results of bacterial renal infection. Bacteriological investigations revealed that the isolated organisms were: *Escherichia coli* (20%), *Staphyolcoccus aureus* (25%), *Pseudomonas aeruginosa* (5.0%), *Streptococcus spp.* (7.5%), *Enterococcus faeclis* (7.5%), *Corynebaeterium spp.* (17.5%), *Klebseilla pneumoniae* (2.5%). and. *Listeria monocytogene* (2.5%). Moreover, mixed infection found in 12.5% of the examined samples. A total of eight isolates of E coli from renal examined samples were serologically positive to *O111, O104, O26, O113, O91, O103 and O126.* PCR results showed that two strains for *Listeria* isolates were *Listeria monocytogenes* and some of them have InI B gene.

Antibiogram was applied upon the isolated bacterial pathogens and found that Garamycine was the drug of choice for treatment of infected animals.

Keywords: Urine, tissue, diseased, age, sex der.

INTRODUCTION

An infection of urinary tract is the most highly bacterial infections worldwide. Inflammation of the kidneys were the most findings in sheep. El-Mashad Bancroft *et al.,* 2019 and (Sjo¨lund *et al.,* 2020). Animal productivity is reduced both quantitatively and qualitatively as a result of the urinary system, which results in severe economic losses. (Ahmed *et al.,* 2020). Reviewing the diseases of sheep in the Egyptian literature 30 years one can realize that urinary system diseases constituted a great problem especially urethra and urinary bladder, however the kidneys did not receive much attention. (Nehal, 2004) and (Ali, and Khalid. (2017).

Inflammation of mostly parts of kidneys was named as. Pyelonephritis it is occasionally affected sheep while isolated firstly a bovine diseases (Radostits *et al.,* 2007). Pyelonephritis's pathogenesis is mainly resuled from the bacterial abnormal

Corresponding author: Jakleen Halim Twafik
E-mail address: jakleenbebway43@gmail.com
Present address: Researsher In Animal Health Researsh Institut Assiut

reflex of contaminated urine across all urinary tract from lower part to the renal pelvis and colledting tubules (Vesicoureteral reflux) as in urethral obstruction and cystitis (Lucky, 2003). The most signieicant bacteria infected are E coli, K. pneumonia, Actinomyces pyogens, Staph. Aureas, Corynebacterium renale and Proteus (Radostits *et al.,* 2007). Enteropathogenic E coli (EPEC) is a subset of pathogenic E coli can cause infections in sheep (Cheila *et al.,* 2011). Several E. coli serogroups were isolated somewhat differ in each study (Cid *et al.,* 2001, Wani *et al.,* 2004 and Cecilie *et al.,* 2013).

An infections with Proteus, Klebsiella, Citrobacter, Enterobacter, and Pseudomonas species and Staphylococcus saprophyticus, and streptococc causes Cystitis in ruminant. Escherichia coli, is the most common agent for infectious cystitis (Echols *et al.,* 1999), Pyelonephritis cystitis, and urethritis in sheep and cattle are most usually brought on by an ascending urinary tract infection (UTI) with Corynebacterium renal or Escherichia coli. Staphylococcus spp., Streptococcus spp., Pseudomonas spp., Proteus spp., While as Arcanobacterium pyogenes, Corynebacterium pseudotuberculosis, and other C.renale group members are less frequent causal organisms. Although it is far less common, bacteraemia with agents like Salmonella species, Arcanobacterium pyogenes, or in small ruminants, Corynebacterium pseudotuberculosis can cause renal infection via the hematogenous pathway (suppurative embolic nephritis) (Yeruham *et al.,* 2006, Radostits *et al.,* 2007; Smith, 2009; Abdel-Baset *et al.,* 2019).

These bacteria not only show signs of a urinary tract infection but were isolated from apparently healthy cattle. Additionally, they have pathogenesis-predisposing variables such urolithiasis, problematic or late pregnancies, prostatic hypertrophy, paralysis of the bladder, and urethral abnormalities. (Normohammadzadeh *et al.,* 2003; Yeruham *et al.,* 2006 Radostits *et al.,* 2007; Smith, 2009). Shedding of mature epithelial cells with attached bacteria through normal micturition is the urinary tract defense mechanism against bacterial infection and colonization. The amount and severity of the bacterial infection, the existence of urogenital trauma or aberrant vulvar conformation, obstetric manipulation, bladder catheterization, and urine retention are all factors in ascending UTI Ali, and Khalid. (2017) Ahmed *et al.,* 2013 and Smith, 2009). Enterotoxigenic Escherichia coli are considered the most causative agents of renal affection in sheep. Enteropathogenic Escherichia coli (EPEC) is a subset of pathogenic E. coli (Cheila *et al.,* 2011). Several E. coli serogroups were isolated somewhat differ in each study (Cid *et al.,* 2001, Wani *et al.,* 2004 and Cecilie *et al.,* 2013). Salmonella is a main reason of renal affection diseases in sheep and goat in the world. It has been isolated from the feces and urine of sheep and goats by ratio of 0.7% (Molla *et al.,* 2006; Moyaert *et al.,* 2019 Mahouz *et al.,* 2015): Elgumaa *et al.* (2017) and Cheila *et al.,* 2011).

AIM OF WORK

The current study is carried out to employ antibiogram diffusion technique to isolate and identify bacterial agents that affected urinary tract in sheep as well as determine the best drug to treat them.

MATERIALS AND METHODS

1-Animals:

This study was carried out on: 50 sheep of different ages and sex from different regions in Matrouh Governorate suspected clinically of renal affection from frequent intermittent and painfull urination, changed urine color and odor also sometimes found rise of body temperature with depression, loss of appetite and general weakness. Post mortum examination of kidneys in slaughtered or dead animals was done.

2-Samples:
For bacteriological examination, urine sample was taken under complete aseptic condition directly by urinary catheter or by discard the first drops of urine and take the middle from living animals, in clean and sterile Mc.Carteny bottles and after centrifugation of the urine ,we examined the sediment bacteriological in the laboratory.. Another samples were collected under aseptic condition from slaughtered animals including whole kidney and urinary bladder after tying the urinary bladder and put in sterile plastic container. We were preserved all samples in ice boxes and immediately transported to the lab for bacteriological analysis. Foreyt (2001)

3-Bacteriological examination:
For urine samples:
Centrifugation of the samples in centrifuge at 2000 r.p.m. for 10-15 m. to bright sediment (Boöll and Gründer, 1981 and Leng, 1995) then inoculated the sediment with a platinum loop into blood and McConkey plates and incubated at 37°c for 72 hrs. We examined growing colonies by naked eye for size, shape, and zone of haemolysis.

Microbiological analysis for Listeria isolation:
Fraser broth (Merck) was used for enrichment and the selective agar media ALOA®, Merck agar (Merck), OXFORD were used for selective plating.

For isolation and identification of L. monocytogenes we was used ISO 11290 method in this study as described by Becker *et al.* (2006).

For tissue samples:
The surface of each sample was touched by hot spatula and opened under complete aseptic conditions by scalpel. Each sample was immediately cultured on nutrient broth for 24 hours at 37 °C, and then an inoculum was grown on various selective medium, such as nutrient agar, 5% sheep blood agar, and MacConkey agar. All inoculated plates were incubated aerobically at 37ºC for 24-48 hrs. The suspected colonies were identified cultural, morphological and biochemical characters according to [Baily and Scott (1994) and Quinn *et al.* (1994)].

4-Microscopical examination:
Each colony's smear was removed, spread out on a dry, clean slide, stained with Gram stain to show gram positive and gram negative bacteria, and then examined under a microscope to look at the morphology of the microbes.

5-Biochemical characteristics:
Specific tests in which the isolates could be identified including coagulase test, haemolysin on blood agar plates and gelatin liquefaction (Crookshank 2007).

Serological identification:
The isolated *E. coli* strains were sent for clinical microbiology units in Benha University Faculty of Veterinary Medicine-Food Analysis Center for serological identification

6-Serological identification of E. coli

The isolates were serologically identified according to Kok *et al.* (1996) by using rapid diagnostic antisera sets (DENKA SEIKEN Co., Japan) for detection of the Enteropathogenic types.

Genotypic detection of isolated L.monocytogenes using polymerase chain reaction (PCR)
Three sets of primers was used in PCR to detect genes of *L.monocytogenes* strains and 10 virulence genes of *L.monocytogenes*. The internalin B (inlB) was virulence genes Kumar *et al.*, 2015.

Analysis of the PCR Products.
PCR products were separated by electrophoresis on 1.5% agarose gel (Applichem, Germany, GmbH) in 1x TBE buffer at room temperature using gradients of 5V/cm. For gel analysis, 20 µl of the products was put in each gel slot. A

Gelpilot 100 bp plus Ladder (Qiagen, Germany, GmbH) using determine the fragment sizes. A gel documentation system (Alpha Innotech, Biometra) was using for photographed the gel and computer software was using for analyzing the data. From Metabion German, Oligonucleotide Primer. Primers used have been supplied.

PCR amplification: In a 25- µl reaction containing 12.5 µl of EmeraldAmp Max PCR Master Mix (Takara, Japan) primers were utilized, 1 µl of each primer of 20 pmol concentration, 5.5 µl of water, and 5 µl of DNA template. In an Applied biosystem 2720 thermal cycler reaction was performed,

7-Antibiogram study:
All isolated bacteria were tested for antimicrobial sensitivity using the conventional disc technique (Boone and Castenholz 2001). Eight different chemo therapeutic agents (BioMerieux discs) were used. The discs used for the in vivo assay namely erythromycin (15 µg), Garamycin (30 µg), Kanamycin (30 µg), neomycin (30 µg), oxytetracycline (10 µg), spectinomycin (10 µg), chloramphmicol (30 µg) and ampicillin (10 µg).

RESULTS

Post mortum examination of the renal system of affected animals showed that some kidneys appeared swollen, the capsules were thickened and tightly adherent to the underlying cortex. The surface of which was mottled red and fawn. Cut section showed multiple white striations throughout the cortex and medulla was interspersed with areas of hemorrhage and abscess formation in the kidney. On the other hand, some kidneys were pale and greatly enlarged. The cortex of kidneys was rough and strong when cut. There were spots on the surface throughout their entire depth.

The bacteriological examinations of suspected cases of urinary tract affections in sheep revealed that 40 (80%) cases was positive for renal tract infections the number of females affected are more than males. The percentage of infected females 62.5% from all positive cases while that of males 37.5% from positive cases which constitute 80% from all sheep animals. There was no significant difference between their ages.

Table 1: Biological sex influences susceptibility to bacterial infection in examined cases:

Total number (50)		**Females**		**Males**	
+	-	+	-	+	-
40 (80%)	10 (20%)	25	3	15	7

The bacteriological findings:
Identification of isolates from all samples resulted in the detection of 40 bacterial isolates. The isolates constituted 7 genera from different species of both Gram positive and Gram negative bacteria. The following strains were recognised as the isolated ones:

Streptococcus spp. 3 (7.5%), *Enterococcus faecalis* 3 (7.5%), *Corynebacterium renal* 7 (17.5%), *Escherichia coli* 8 (20%), *Staphylococcus aureus* 10 (25%), *Pseudomonas aeruginosa* 2 (5%), *Streptococcus* spp. 3 (7.5%), and *Klebseilla pneumoniae* 1 (5%), Listerria monocytogene7 (12.5%) and mixed infection1 (5%) Out of the 30 samples that were tested, these isolates were found in 21 samples with positive results (about 70%). Five samples exhibited two isolates each; of them (6.7%) showed Listeria monocytogene while 3 isolates the mixed bacteria (3.3%) included *Corynebacterium renal* and *Streptococcus* spp.

Table (2): Incidence of the isolated micro-organisms from sheep samples of renal affection:

Micro organisms	**Positive samples**	
	NO.	**%**
Single infection:		
Staph. Aureus	10	25
Corynebacterium renal	5	17.5
Streptococcus spp.	3	7.5
E.coli	8	20
Pseudomonas aeroginosa	2	5
Enterococcus faecalis	3	7.5
Klebseilla pneumonia	1	2.5
Listeria *monocytogene*	1	2.5
Coryn. renal and streptococcus	7	12.5
Total	40	100

Antimicrobial sensitivity test revealed that garamycin (30µg) was the most effective antibiotic against most isolated microorganisms of *Staph. aureus* and *E. coli*. However, oxytetracycline (30µg) was the drug of choice for *Corynebacterium renal*.

Table (3): Antibiogram test of the isolated strains

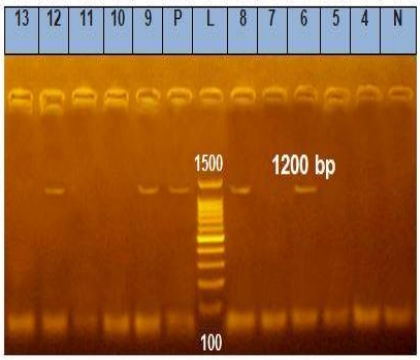
Bacterial spp. / Antibiotic discs	*Staph. aureus* (10)	*Coryn.renl* (7)	*Strept. spp.* (3)	E.coli (8)	*Pseudomonas aeroginosa*(2)	*Entero. Faecalis* (3)	*Klebseilla pneumoniae* (2)
Erythromycin (15µg) S %	4 46%	3 46%	2 50%	1 10%	2 80%	1 30%	0 9%
Chloramphenicol (30µg) S %	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Kanamycin(30µg) S %	1 6%	1 10%	1 2%	4 46%	1 10%	0 0	1 60%
Neomycin (30µg) S %	0 0	0 0	0 0	1 10%	1 20%	0 0	0 0
Garamycin 30µg) S %	8 80%	8 76%	2 60%	6 80%	2 84%	2 50%	1 65%
Ampecillin(10µg) S %	2 18%	6 80%	2 50%	1 5%	0 0	2 75%	0 9%
Oxytetracycline (30µg) S %	7 73%	2 25%	3 90%	3 35%	1 67%	2 60%	1 37%
Spectinomycin (20µg) S %	1 70%	3 40%	2 50%	4 50%	1 22%	1 27%	0.2 10%

S: sensitive %: percent of sensitivity

Table (2): Serological identification of *E. coli* strain from fecal samples of diseased sheep

Identified strains	No of total isolates	Male	Fmals
E. coli O111 : H2 EPEC	2 isolates	1solates	1 isolates
E. coli O104: H4 EPEC	1 isolates	3 isolates	----
E. coli O26: H11 EPEC	1 isolates	1 isolates	-----
E. coli O113 : H21 EPEC	1 isolates	=====	1 isolate
E. coli O91 EPEC	1 isolate	1 isolate -	====
E. coli O103: H2 EPEC	1 isolate	==	1 isolate
E. coli O126 EPEC	1 isolate	===	1 isolate

Fig. (2): In lB genes. Lane L:100-1000 bp Ladder. Neg: Negative control. Pos: Positive control at (174bp). Lanes 1 to 12



DISCUSSION

Renal system is considered to be one of the four main channels by which living animals eliminated its metabolic waste products. One of the vital and important organs of these are kidneys which posses a great importance for the stability of internal environment of the body it is well known also that if both kidneys are destroyed under any reason the animal die within 3 days (Guyton and Hall, 2000). Now days the animals are subjected to different types of rations plus the increase of pollution due to modern life even in Villages the kidneys are subjected to different diseases, which are in excess as reported by many veterinarians working in the field. From the case history, increased gradual with fluctuating temperature, loos of appetite, poor body condition, all these sings which represented renal affection (Ahmed *et al.,* 2020). Moreover, the general clinical examination of the renal diseased animals revealed signs of depression, hydration status and systemic abnormalities (Meyer *et al.,* 1992). The result of this study agreed to Bikaner *et al.,* 2016 in the cause of urinary tract infection are the bacteria and characterized by fever, colic and pyuria phenomenon and/or haematuria. PM finding in the present study revealed that the affected kidneys were enlarged and the capsule was easily stripped. The surfaces of which was mottled with circular red or sometimes yellow spots. Similar findings observed in kidneys of cattle suffered from pyelonephritis as a result of infection with *Corynbacterium renale, Arcanobacter pyo*genes and *Escherichia coli* (Braun *et al.,* 2008). The infection is more common in female than male this may be because female animals are predisposed to urinary tract infection because of their short urethra, urethral trauma, possibly hormonal effects and more reproductive system infection (Radostits *et al.,* 2007; Yeruham *et al.,* 2006).

The results indicated that 80% from all samples taken were positive bacteriologically for renal bacterial affections. Many organisms could be identified as *Staph. aureus, E. coli, Corynebacterium renal, Streptococcus spp., Enterobacter faecalis* and *klebseilla pneumoniae*. Which agreed with (Normohammadzadeh *et a1.,* 2003). The most common isolates observed were *Staphylococcus aureus* (25.0%) and *E. coli* (20.0%) (Table 2). Another study Mohammed *et al.* 2020 detected 46 isolates, divided to 44/56 (78.5%) *E. coli* and 2/4 (50%) *K. pneumoniae. E. coli* is a normal

inhabitant of lower intestine & is abundant in faeces and in the environment (Timonedy *et al.,* 1988 b). E. coli also, may be a common pathogen involved in urinary tract infection (Rebhum *et al.,* 1989). Serological characteristic of *E. coli* strains according to pathogenic mechanisms classified into four major categories enterotoxigenic *E. coli* (ETEC), enteropathogenic *E..coli* (EPEC), enteroinvasive *E..coli* (EIEC) and enterohemorrhagic *E. coli* (EHEC), which are represented by different serotypes based on O (cell-wall lipopolysaccharide), H (flagellar protein) and K (capsular polysaccharide or envelope) antigens (Collee *et al.,* 1996). In our study, 8 random *E. coli* serotypes were recorded to *O111, O104, O26, O113, O91,O103* and *O126.*

Some of these isolates (*O 26, O91, O113* and *O 104)* were also recorded by Cid *et al.* (2001) and Wani *et al.* (2004). The serogroup O78 which was isolated from hemorrhagic renal outbreak in sheep in India (Sharma *et al.,* 2003) and in Norway (Cecilie *et al.,* 2013) was not isolated in this study. Moreover, the serotypes O22, O55, O10 Bhat *et al.* (2008) which was not isolated in our study this may be attributed to different locality of each study. *Streptococcus spp.* and *Enterococcus faecalis* (7.5%) are also, opportunists & have been associated with pyelorephritis as recorded in sheep (Maxie and Prescott, 1993). *Pseudomonas aeruginosa* (5.0%) and Klebseilla *penmoniae* (5.0%) were recovered in the present study and was considered as a least agent of renal affection in sheep as recorded also by (Timonedy *et al.,* 1988 c). Sarita *et al.* (2016).

One of the main causes of the emergence and transmission of resistant bacteria from food animals to people through the food chain is the unchecked use of antibiotics in livestock.

The most effective antibiotic against *E. coli* in the current study's antimicrobial sensitivity test was garamycin (30 g), followed by kanamycin (Table 3). However, 100% resistance was detected when examine E. coli strains to tetracycline and erythromycin, 56.8% for penicillin but showed 100% sensitive to streptomycin and gentamycin, 90.9%; 75% sensitive to ciprofloxacin and trimethoprim respectively and 59% for chloramphenicol (Ahmed *et al.,* 2020). The results illustrated in Table 3 indicated sensitivity of *Staph aureus* strains to Garamycin 80% and Oxytetracycline 73%. These results come parallel with those recorded by (Fowler, 1998).

Regarding *Corynebacterium renale* the isolates were sensitive to Ampicillin 80% and Garamycin 76%. Contrarily, the data showed that 50% of Coryne were susceptible to chloramphenicol and that 100% of Coryne were sensitive to streptomycin, gentamycin, ciprofloxacin, and trimethoprim however, it was discovered that 100% of Coryne were tetracycline, erythromycin, and penicillin resistant. (Ahmed *et al.,* 2020). The highest sensitivity percent 90% in the current study was recorded on Streptococcus strains by Oxytetracycline followed by garamycin 60%. Klebciella pneumonae strains showed resistant for many antibiotics but sensitive to Garamycin 65% and Kanamycin 60%. In the genus Klebsiella spp., Klebsiella pneumonia is a species of aerobic Gram-negative bacterium that is the most significant human pathogen. It is the second-most significant microbe that causes urinary tract infections, behind Escherichia coli Finally, Antimicrobial sensitivity test revealed that garamycin (30 µg) and oxytetracycline (30µg) were the antibiotic of choice for combating bacterial renal infection. Silva/ *et al.* (2020) The result of PCR for amplification of internalin B (inlB)gene in L.monocytogenes showed that, in lB gene was amplified in all tested isolates, that disagreed with (Shen *et al.,* 2000).

CONCLUSION

From the present study, it was concluded that, *Staph. a*ureus, *E.coli*. and *coryn.renal* are the most common pathogens which cause kidney problem in sheep. Recommendation for treating and controlling the clinical cases with the drug of choice based on the isolation of the causative organism and on the anti-biogram study which is garamycin and oxytetracycline. In PCR result assured that strains are listeria monocytogenes and have inlB virulence genes.

REFERENCE

Abdel-Baset I. El-Mashad, Shawky A. Moustafa, Aziza Amin and Massimino B.I. (2019): Tendene Comparative pathological Studies on Kidneys affections in slaughtered farmanimals Department of Pathology, Faculty of Veterinary Medicine, Benha University Benha Veterinary Medical Journal, Vol. 36, No. 1:192-202, Mrch, 2019.

Ahmed, S.J.; Kubaisi, A.S.; 'Abdulkhaliq, J.R. and Hassan, S.M. (2020): Bacteriological and pathological study on kigney of slaughtered sheep in Fallujah city Indian journal of for. Medicineof techniologyMarach 2020Vol.14 No 1

Ali, N.N. and Khalid. (2017): Pathological study on some renal lesion in sheep and goats in Diyala Province. I.J.S.N. 8: 611-615 Ali, N.N. and Khalid. (2017): Pathological study on some renal lesion in sheep and goats in Diyala Province. I.J.S.N. 8: 611-615

Baily, E.R. and Scott, E.G. (1994): "Diagnostic Microbiology" text book for the isolation and identification of pathogenic microorganisms 4th Ed., the C. V. Mosby Company, Saint Louis".

Becker, B.; Schuler, S.; Lohneis, M.; Sabrowski, A.; Curtis, G.D.W. and Holzapfel, W.H. (2006): Comparison of two chromogenic media for the detection of Listeria monocytogenes with the plating media recommended by EN/DIN 11290-1. Inter. J. Food Microbiol, 109, 127e131.

Bhat et al., (2008): Prevalence and virulence gene profiles of Shiga toxin-producing *Escherichia coli* and enteropathogenic *Escherichia coli* from diarrhoeic and healthy lambs in India. Small Ruminant Res.75 (1):65-70.

Boöll, H.B. and Gründer, H.D. (1981): "Harn sediment unter such ungen in der Rinderparaxis, tecknik und diagnostiche Bewertung, (Examination of the urine sediment in cattle clinic, Technique and evaluation). Tieraeztl Praxis 9, 119-126 Hans Marseiile Verlag Gmbtl Muenche.

Bikaner. Jamal, D. and Kebede, B. (2016): the study of major parasitic causes of organ condemnation and financial losses in cattle slaughtered at Hawassa Municipal abattoir, Athiopia. Congent Food & Agriculture. 2: 1- 12.

Bone, F. Jesse (1982): Animal anatomy and physiology, 2nd ed. By Reston publishing company.

Boone, D.R. and Castenholz, R.W. (2001): "Bergey`s Manual of systemic Bacteriology" Second Ed., Vol. (1), USA.

Braun, R.V., Nuss, K.; Wehbrink, D.; Rauch, S. and Pospischil A. (2008): "Clinical & ultrasonographic findings, diagnosis & treatment of pyelonephritis in 17 cows." Vet. J.; 175 (2): 240 – 248.

Cecilie, K., Kjelstrup, Lotte P., Stenfors, Arnesen, Erik, G., Granquist, b., Trine, M., L'Abe´e-Lund, a., (2013): Characterization of *Escherichia coli* O78 from an outbreak of septicemia in lambs in Norway Vet. Microbiol. 166:276–280.

Cheila, M.D. de P.; C.R. Ana, P. Luiza, H. doA. Patricia and C.J. Eduardo (2011): Antimicrobial resistance in *Salmonella enteritidis* from food involved in human Salmonellosis outbreaks in southern Brazilfrom 2003-2006. J Mic and Antimicrob. 3(9): 233-240.

Cid, D., Ruiz-Santa-Quiteria, J.A., Marin, I., Sanoz, R., Orden, J.A., Amils, R., de La Fuente, R. (2001): Association between intimin (eae) and EspB gene subtypes in attaching and effacing *Escherichia coli* strains isolated from diarrhoeic lambs and goat kids. Microbiol. 147: 2341-2353.

Crookshank, R. (1975): Medical Microbiology, a guide to the laboratory diagnosis and control of infection 11th Ed., Livingstone Limit., Edinburgh.

Echols, R.M., Tosiello, R. L., Haverstock, D.C. and Tice, A.D. (1999): Demographic, clinical, and treatment parameters influencing the outcome of acute cystitis. Clinic. Infect. Dis. 29:113119.

El-Mashad Bancroft, D.J.; Cook, C.H.; Striting, R.W. and Turner, D.R. (2019): BVMJ morphological Changes in Kidneys of slaughtered Sheep and Goats in Jammu Region. -36(1): 1-13 202 diagnostic application.

Elgumaa, M.M.; Mohammed, F.F.; Elmady, M.M.; Bakeer, A.M.and Mokhtar, H.G. (2017): Pathological Characterization of renal lesions developed in some ruminant species in Egypt slaughterhouse, Research Journal of Pharmaceutical, Biological and chemical sciences.8: 1867-1878.

Foreyt, W.J. (2001): Veterinary Parasitology Reference Manual, Fifth Edition. Iowa State Press, A Blackwell Publishing Company.

Fowler, M. E. (1998): "Medicine and surgery Camelids" Iowa state, University Press. Ames, USA.

Guyton A.C. and Hall J.E. (2000): Test book of Medical Physiology 10th ed. Elsevier Science. United States. Canada .Australia .New Zealand.

Kumar V, Worswich, D. and Gowans, E. (2015): Expression of RCK2 MAPKAP (MAPK-activated protein kinase) rescues yeast cells sensitivity to osmotic stress. Microb Cell Fact 14:

Kok, T.; Worswich, D. and Gowans, E. (1996): Some serological techniques for microbial and viral infections. In Practical Medical Microbiology (Collee, J.; Fraser, A.; Marmion, B. and Simmons, A., eds.), 14th ed., Edinburgh, Churchill Livingstone, UK.

Leng G.V. (1995): Urine culture techniques and identification of bacteria in lower urinary tract diseses of small animals. Philadelphia. Mosby Year, Book. Pp 37-42.

Lucky. R.J. (2003): "What your diagnosis perirenal abscess and pyelonephritis." J. Small Anim. Pract. Feb., 44 (2) 55 – 90.

Maxie, M.G. and Prescott, J.F. (1993): "The urinary system. In pathology of Domestic Animals." 4th ed. Vol. 2. Eds K. V. F. Jub. P. C. Kennedy, N. Palmer San Diego, Academic Press. PP 511 – 514.

Meyer, D.J., Coles, E.H. and Rich, L.J. (1992): Veterinary laboratory

Medicine, Interpretation and diagnosis, W.B. Saunders Company. Philadelphia, London, Toronto, Tokyo.

Molla, W., B. Molla, D. Alemayehu, A. Muckle, L. Coleand E. Wilkie (2006): Occurrence and antimicrobial resistance of *Salmonella* serovars in apparently healthy slaughtered sheep and goats of central Ethiopia. Trop animhealth prod. 38(6): 455-62.

Moyaert H, de Jong A, Simjee S, Rose M, Youala M, El Garch F, et al. (2019): Survey of antimicrobial susceptibility of bacterial pathogens isolated from dogs and cats with respiratory tract infections in Europe: PLOS ONE Overestimation of antimicrobial resistance PLOS ONE | https://doi.org/10.1371/journal.pone. 0238708 September 3, 2020 13 / 15 ComPath results. Journal of applied microbiology.; 127(1):29–46. https://doi.org/10.1111/jam. 14274 PMID: 30955231.

Mahouz, F.; Khoudja, F.B. and Chikhaoui, M. (2015): Pathological study on renal Diseases in Cattle and Sheep. Journal of Animal and Veterinary Advances 14: 357-360

Nehal, M.A. (2004): Laboratory and pathological studies on possible causes of renal diseases in sheep. Department of Animal Medicine, Faculty of Vet. Med. Assiut University, Assiut Egypt, 2004.

Normohammadzadeh, F., Haji Hajikolaei, M.R., Zahraei Salehi, T., Tabatabaei, A.M. (2003): Bacteriological study of urine in cattle slaughtered at Tehran province abattoirs. J Vet Res (Uni Tehran). 58: 231-233.

Quinn, P. J.; Carter, M. E., Markey, R.K. and Carter, G. R. (1994): "Clinical Veterinary Microbiology" Wolfe, Publishing Livestock, London.

Radostits, D.M., Gay, C.C., Hinchcliff, K.W., Constable, P.D. (2007): Veterinary Medicine. (10th ed.) W. B. Sanuders, London, UK.

Rebhum, W.C.; Dill, S.G. and Perdizet, J.A. (1989): "Pyelonephritis in cows: 15 cases (1982-1986)." Journal of the American Veterinary Medical Association 194, 953-955.

Sarita, A.; Mathur, M.; Dadhich, H. and Sharma, T. (2016): Occurrence and pathology of various condition of urinary system in sheep (Ovis aries). M.v.sc. Thesis. Pathology. Vet. Med. and Ani. science. Rajasthan, Uni. Bikaner.

Shen Y, Naujokas M, Park M, Ireton K (2000): InIB-dependent internalization of Listeria is mediated by the Met receptor tyrosine kinase. Cell 103: 501–510.

Sharma, M.M., Ayub, M., Sharma, P.R., Yadav, S.B.S. (2003): Escherichia coli O78 infection in sheep at an organised farm in Rajasthan. In: Paper Presented in XXI Conference IAVMI February 7–9, Division of Animal Health, ICAR Research Complex for NEH Region, Meghalaya.

Silva N, Phythian CJ, Currie C, Tassi R, Ballingall KT, Magro G, et al. (2020): Antimicrobial resistance in ovine bacteria: A sheep in wolf's clothing? PLoS ONE 15(9): e0238708. https://doi. org/10.1371/journal.pone.0238708

Smith, P.B. (2009): Large Animal Internal Medicine. (4th ed.) Mosby Co., New York, USA. Sjo¨lund M, Bengtsson S, Bonnedahl J, Hernandez J, Olsen B, Kahlmeter G. 2020 Antimicrobial susceptibility in Escherichia coli of human and avian origin—a comparison of wild-type

distributions. Clinical microbiology and infection: the official publication of the European Society of Clinical Microbiology and Infectious Diseases. 2009; 15(5):461

Timonedy, J.F., Gillesoie, J.A., Scott, F.W. and BarLough, J.E. (1988 b): "The genera Corynebacterium and Eubacterium." In Hagan and Bruner s Microbiology and Infectious Diseases of Domestic Animals. 8th ed. Eds. J. E. Timoney, J. A. Gillespie, F. W. Scott, J. E. Bar Lough. Ithaca, Comstock Publishing Associates. PP 247 – 253.

Timonedy, J.F.; Gillesoie, J.A.; Scott, F.W. and BarLough, J.E. (1988 c): "The genera Actinomyces. In Hagan and Bruner`s Microbiology and Infectious Diseases of Domestic Animals." 8th ed. Eds. J. E. Timoney, J. A. Gillespie, F. W. Scott, J. E. Bar Lough. Ithaca, Comstock Publishing Associates. PP 264 – 266.

Wani, S.A., Bhat, M.A., Samanta, I., Ishaq, S.M., Ashrafi, M.A., Buchh, A.S. (2004): Epidemiology of diarrhea caused by rotavirus and *Escherichia col*i in lambs in Kashmir valley, India Small Rumin. Res. 145–153.

Yeruham, I., Elad, D., Avidar, Y., Goshen, T. (2006): A herd level analysis of urinary tract infection in dairy cattle. Vet J. 171: 172-176.

دراسات على العدوى البكتيريه في الجهاز البولي للاغنام بمحافظة مطروح

جاكلين حليم توفيق

Email: jakleenbebway43@gmail.com Assiut University web-site: www.aun.edu.eg

اشتمل البحث على ٥٠ حيوان من الاغنام من مناطق مختلفه في محافظة مطروح بالاضافه على بعض العينات من النسيج من الحيوانات المذبوحه من مختلف الاعمار والجنس اخذت عينات بطريقه معقمه من البول واستعمال الراسب المتكون من عمليه الطرد المركزي وايضا نسيج من الجهاز البولي للحيوانات المذبوحه لعمل الفحص البكتريولوجي.

عند فحص الجهاز البولي بعد ذبح الحيوان وجد تورم في بعض الكلى للحيوانات مع تنقيطها باللون الاحمر وعند اخذ قطع للنسيج وجد نزول دم او صديد في بعض الحيوانات. في الفحص البكتريولوجي تم عزل ٧ انواع مختلفه من البكتريا المسببه للمرض موجبه وسالبه الجرام وهي الايشريشيا كولاي (% 20.0) المكورات العنقودية الذهبية(٢٥%) ميكروب القيح الازرق ا(٥,٠%) سلاسة الميكروب السبحى (٧,٥%) اينتيرو فيكاليز (٧,٥%) كورينباكتيريم رينال (١٧,٥%) بالاضافه الى كليبسيلا نيمونيي (٢,٥%) واللستريا منوسيتوجين. (٢,٥%) الى جانب وجود ١٢,٥% من الحالات اظهرت اصابات مختلطة من اكثر من نوع من البكتريا . أظهر التنوع المصلى لعترات الميكروب القولونى عن و جود

O111, O104, O26, O113, O91 ,O103 and O126.

تم عمل اختبار حساسيه الميكروبات للمضادات الحيوية واظهرت النتائج ان الجاراميسين هو الدواء المختار لعلاج تلك الحالات فيما عدا الكورينبكتيريا رينال كان الاوكسيتتراسيكلين هو الاكثر فاعلية

اظهرت نتائج PCR أن سلالتين من عزلات الليستريا هما Listeria monocytogenes وبعضها يحتوي على جين InI B.