Isolation of diverse enterobacterial species from sheep diseases in salah-Din City, Iraq.

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Abstract

Sheep disease is economically important problem because several agent may be involved in the etiology of it. Theains of this present study was conducted to throw light on bacterial infection the sheep in salah din province .from 1524 examined sheep,61.1%(n=931) were found to be isolated bacteria seropositive and 38.91% (n=593) were found to be isolated bacteria seronegative .nine hundred thirty one samples of blood (37.6%), feces (30.3%), milk (24.5%) and Wool(7.6%). Were examined. The isolated bacterial were Ecoli 402(43.17%) which was the most predominant bacterial isolate. other bacteria isolated were Salmonella 207(22.23%), klebsiella spp isolated1 72(18.47%) and proteus spp 150(16.11%) .the antimicrobial susceptibility of isolated bacteria was done to determine its susceptibility.

Introduction

The economical production of sheep for market depends mainly upon breeding, environment, and nutrition. The prevention of disease, although superficially an entity, is intimately associated with these three factors.[1]

Appearance of the diseases can be slight and serious degree of clinical symptom that usually leads to death of the animal. every variant of diseases reduces or prevents raw material productivity of farm animals, and increases the loss of economic benefit. Only a healthy livestock is capable of producing animal products under optimal productive conditions[2].

The aim of sheep breeding and keeping is the economical production of animal products. Only healthy animals are suitable for this reason. Healthy sheep have a good constitution, long and useful lifetime, appropriate live weight characteristics concerning its pecies/gender, have good fodder eating capacity and grazing habits, and they are disease and parasite resistant. Depending on their species, female (milch-ewe/ewe) sheep have the ability for oestrus and conception in less seasonal or seasonal period of time. The rams have continuous mating temper (libidó sexualis), and covering/fertilizing ability[3].

Possible diseases of sheep are various enough similarly to other animals. According to their category they are, bacterial diseases (Clostridial. spp, Brucellosis, *Chlamydia*. spp, Leptospirosis, Campylobacteriosis, Salmonella. spp, *Corynebacterium pseudotuberculosis* and *E. Coli*), viral diseases(FMD, Bluetongue, Rift Valley Fever and Rabies diseases of complex etiology), parasitic diseases (Cryptosporidiosis, Coccidiosis, *Haemonchus*, *Trichostrongylus*, *Ostertagia* sp, *Nematodirus* spp., *Moniezia* sp, *Paralaphostrongylus tenius*, deer worm and brain worm. Diseases) caused by fungal toxins, traffic of material and deficiency diseases, medical diseases, intoxications, genital diseases and disease of the limb[4].

In common with other farm animals, sheep suffer from a wide range of diseases such as lameness, mastitis, sheep scab, watery mouth and toxoplasmosis. Many sheep suffer from pneumonia and hypothermia during the winter when exposed to harsh weather conditions, particularly in upland areas. More intensive farming means lambs are weaned earlier, fed on milk substitute/feed concentrates and housed indoors. This has led to increasing disease problems. Infectious diseases account for around 60% of lamb losses. Many of these losses could be reduced by better flock security, an effective disease control programme, and good husbandry [5]. Vaccination and dipping may be used to prevent some diseases. Sheep dipping was made compulsory twice a year in 1985 but made non-compulsory again in 1992. Sheep dips contain toxic organophosphates which are believed to be responsible for a high incidence of severe illness in farmers. Sheep dip products safeguard sheep from pests like scab, blowfly, ticks and lice. The Groundwater Protection Code investigates sheep dipping as a priority because it has caused serious environmental damage in the past. The active ingredients of dip are generally highly toxic to aquatic life. Regulations require that before disposing, or tipping[6].

Materials and Methods

1-Study design and methodology:-

The study design used was cross-sectional study and it was carried out from 1/1/2013 to13/12/2013. the methods employed in this study include: healthy and clinical ; confirmatory diagnosis was made by using cultural examination, Grams staining and different biochemical tests, and Antimicrobial sensitivity tests done for all isolates.

2-Animals:

This study was carried out on 1524 sheep from different localities, 931 of them were suffering from bacterial diseases and 593sheeps were not infected with bacterial diseases. Table (1).

Table(1) distribution of bacterial causes among different localities.

	localities.	No.of examined sheep	No. of infected sheep	No. of non infected sheep
1	Tikurit	210	155	55
2	Shrkat	193	149	44
3	Dour	223	138	85
4	Dus-karmatto	146	65	81
5	Bajee	173	109	64
6	Theloauo	205	149	56
7	Balid	146	76	70
8	Sumarria	228	90	38
	Total	1524	931	593
%		**100%**	**61.1%**	**38.91%**

3. Clinical examination:
All animals were subjected to through clinical examination including general health condition and body temperature, pulse, respiration, character of mucous membranes, auscultation of chest and abdomen according to[7].

1-Fecal samples:
Rectal swabs were taken from sheep by sterile cotton swabs and transported to laboratory as soon as possible in sterile nutrient broth that incubated at 37 C for at least 24-28 hours to increasing chances of isolation.

2-Milk sample
milk samples were collected by a standard milk sampling technique as described by [12]. To reduce contamination of the teat ends during sample collection, the near teats were sampled first, followed by the far ones. Approximately 10 ml of milk samples were collected into sterile test tube after discarding the first three milking streams.

3-Blood samples:-
Blood was collected and recorded directly from the jugular vein in sterile plain vacutainer-tubes and individual animal data (age, sex, breed, body condition, and disease history) were also collected.

4-Wool sample:-
Wool sample taken in the field and collected by swabbing from neck, flank and brisk then transport to the Laboratory microbiology and storage at 4c until further analysis.

4- Bacteriological examination
samples (blood, milk, feces and wool) from lambs were cultivated aerobically and an aerobically and bacterial isolates were subjected to characterization by studying their morphological, cultural, and biochemical characteristics as well as their motility according to[8].

5-Anti-biogram test:
The sensitivity of isolated bacteria to different antibiotics was carried-out using the disc diffusion technique according to [9].

Results

Prevalence of bacterial diseases among sheeps:-
As shown in Table (2) from 1524 examined sheep 931 showed to bacterial diseases (61.1%). The highest prevalence was(77.2%) in Sharked, followed by (73.8%) in Tikurit, followed by (72.7%) in Theloauo, followed by(63%) in Bajee, followed by (61.9% in)Dour, followed by(52.1%) in Balid, While the Lowest percentage observed in Dus-karmato and Sumarria (44.4%), (31.3%) respectively.

Table(2) prevalence of bacterial diseases according to samples type.

	Locality	No of Examined sheeps	No of examined samples				Total	%
			Blood	Feces	Milk	Wool		
1	Sharked	193	70	30	38	11	149	77.2
2	Tikurit	210	53	51	31	20	155	73.8
3	Theloauo	205	65	56	28	---	149	72.7
4	Bajee	173	37	27	30	15	109	72.7
5	Dour	223	48	37	53	---	138	61.9
6	Balid	146	37	16	23	---	76	52.1
7	Dus-karmato	146	13	27	2	23	65	44.5
8	Sumarria	228	27	29	32	2	90	31.3
	Total	1524	350(37.6%)	282(30.3%)	228(24.5%)	71(7.6%)	931	

Bacteria isolated from sheeps:-
Table (3) showed that the bacteriological examination of 931 (Blood, Milk, Feces and Wool) samples showed: isolation of E.coil from 402 cases(43.2%) which was the most predominant bacterial isolate. then Salmonella from 207 cases(22.23%). Klbsiella pneumonia isolated from 150 cases(16.11%),proteus vulgaris isolated from 128 cases (13.7%) and Klbsiella oxytoca and proteus mirabilis were isolated from 22 cases(2.4%) (Tab.3).

Table (3) distribution of bacterial isolates among different Localities.

Localities.	Salmonella spp	E.coil	Klbsiella pneumonia	Klbsiella oxytoca	proteus vulgaris	proteus mirabilis
Sharked	44	76	12	----	17	----
Tikurit	24	58	58	----	15	----
Theloauo	28	56	43	14	8	----
Bajee	29	54	6	-----	20	----
Dour	47	62	7	-----	----	22
Balid	12	36	6	8	14	----
Dus-karmato	16	17	13	----	19	----
Sumarria	7	43	5	----	35	-----
Total	207	402	150	22	128	22

Antimicrobial sensitivity test:-

The antimicrobial sensitivity of isolated bacteria show that most *Ecoli* isolates were highly sensitive to chloramphenicol, marbofloxacin, sulfa trimethoprim ,gentamycin, and Cefatoxime, But most of them were resistant to streptomycin, neomycin, tetracycline and amoxicillin. *Salmonella species, proteus vulgaris, klebseilla peumonia* and were highly sensitive to chloramphenicol and marbofloxacin and resistant to sulfa trimethoprim, gentamycin, Cefatoxime, streptomycin, neomycin, tetracycline and amoxicillin. *Klebsiella oxytocia* isolates were highly sensitive to Cefatoxime and amoxicillin while resistant to other. and finally *proteus mirbilis* were highly sensitive to tetracycline and sulfa trimethoprim and resistant to other antibiotic.

Table(4) antimicrobial sensitivity tests on the bacterial isolates.

Bacteria isolates	**Gentamycin**	**Cefatoxime**	**Amoxicillin**	**Tetracycline**	**Choloramphen**	**Trmeth/sulfa**	**Marbofloxacin**	**Neomycin**	**Streptomycin**
Ecoli	++	++	-	-	+++	+++	+++	+	+
Salmonella Spp	+	+	-	-	+++	+++	++	-	-
proteus vulgaris	+	+	-	-	+++	+++	+++	-	-
klebseilla pneumonia	+	+	-	-	+++	+++	+++	-	-
proteus mirbilis	-	-	-	+++	-	+++	-	-	-
Klebsiella oxytocia	-	-	+++	-	-	-	-	-	-

Discussion

Bacterial diseases is an important problem in old and young domestic animals although its etiology is not well understood since several agents may be involved concurrently. Moreover, many of these agents are capable of infecting the host without inducing the clinical illness [10].

Table 1 showed that, 1524 samples from 931 sample give positive bacterial isolation (61.1%) while 593 samples were negative (38.91%). Lower percentages of negative samples were recorded by [11] who found that multi factorial which causes sheep diseases like viral diseases, diseases of complex etiology, parasitic diseases, diseases caused by fungal toxins, traffic of material and deficiency diseases, medical diseases, intoxications, genital diseases and disease of the limb[4].

Table(2) shows the prevalence of bacterial diseases in sheep's which was 61.1%.The highest prevalence was observed in Sharked (77.2%) and the lowest prevalence was observed in Sumarria (31.3%) the variance in prevalence of bacterial diseases because to the animals may acquire the infection through food of animal origin and pastures contaminated with infective slurry or improperly treated fertilizer .the organism may be introduced in the herd via contaminated feed, stuffs, for mites, brids or nematodes stresses such as transport, starvation ,parturition over crowding in communal grazing-Land, holding yards and deactivated latent infection and favors rapid spread of the disease [2].

The bacteriological examination from sheep showing that Escherichia coli was present in (402) samples (43.2%), Salmonella in 207 samples (22.23%), klebsiella puenmonia in 150 samples (16.11%), proteus vulgaris in 128 samples (13.7%), Klbsiella oxytoca and proteus mirabilis in 22 samples (2.4%). Nearly similar bacteria were isolated by [13] from sheep samples. E. coli and Salmonella spp were the most common bacterial isolated from sheep were recorded by[14].

The antibiogram of isolated bacteria show that most E. coli isolates were highly sensitive to chloramphenicol, marbofloxacin, Cefatoxime, gentamycin, and sulfa trimethoprim But most of them

were resistant to streptomycin, neomycin, tetracycline and amoxicillin. Salmonella species, *proteus vulgaris*, *klebseilla peumonia* were highly sensitive to chloramphenicol and marbofloxacin. In similar studies were recorded by(13). . *Klebsiella oxytocia* isolates were highly sensitive to Cefatoxime and amoxicillin while resistant to other In similar studies were recorded by[15]. and finally *proteus mirbilis* were highly sensitive to tetracycline and sulfa trimethoprim and resistant to other antibiotic In similar studies were recorded by[16].

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عزل عدد من الانواع الجرثومية المعوية من الاغنام في محافظة صلاح الدين – العراق

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الملخص

اجريت هذه الدراسة لغرض تسليط الضوء على العدوى البكترية بالجراثيم المعوية للأغنام في محافظه صلاح الدين.

تم فحص١٥٢٤ راس غنم مفحوص، و وجد ان ٦١.١% (n=931) كانت موجبه لعزلات البكتريه و٣٨.٩١% (n=593) كانت سالبه لعزلات البكتريه. تم فحص عينة دم ٣٥٠(٣٧.٦%)،براز ٢٨٢(٣٠.٣%)، حليب ٢٢٨(٢٤.٥%) وصوف ٧١(٧.٦%). من العزلات البكتريه السائدة العزل هي بكتريا Ecoli ٤٠٢(٤٣.١٧%). والعزلات البكتريه الاخرى كانت السالمونيا ٢٠٧(٢٢.٢٣%) و Klebsiella spp كانت ١٧٢(١٨.٤٧%) و١٥٠(١٦.١١%) كانت Proteus spp. اجريه اختبار فحص الحساسية للجراثيم المعزولة لتحديد حساسيتها للمضادات الحياتية.