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Prevalence of some parasitic helminths among slaughtered ruminants in Kirkuk slaughter house, Kirkuk, Iraq

M. A. Kadir*, S. A. Rasheed**

*College of Medicine, Tikrit, Iraq, **Technical Institute, Kirkuk, Iraq

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Abstract

A retrospective study was carried out in year 2003, to show the prevalence of hydatid cysts, liver flukes and lung worm among slaughtered sheep, goats, calves, cattle and buffaloes in Kirkuk slaughter house. The number of ruminants slaughtered in Kirkuk abattoir was sheep (40233), goats (9223), calves (9577), cattle (2855) and buffaloes (50). It was found that the highest rate of hydatid cysts was seen in cattle (4.38%), followed by sheep (1.17%), calves (0.52%) and goats (0.32%) respectively. The rate of liver flukes was observed in sheep (0.50%), goats (0.43%), cattle (2.63%) and 2(4%) in 50 buffaloes slaughtered. No liver fluke was seen in calves. The distribution of lung worm was in sheep (0.55%), goats (0.22%), and cattle (2.98%). No cases were detected from calves and buffaloes. In addition to that there was seasonal fluctuation in the rate of helminthes infection. Hydatid cysts in sheep and cattle were highest in autumn (1.97 & 8.33%) respectively, in goats it was highest in winter (1.01%), while in calves was highest in spring (1.24%), followed by winter (0.84%). The rate of liver flukes in sheep and goats was highest in winter (0.88 & 0.68%) respectively, while in cattle was highest in autumn (5.0%) followed by winter (2.80%). In sheep and goats, the rate of lung worms was highest in winter (0.88 & 1.08%) respectively, while in cattle it w as highest in autumn (5.0%) followed by winter (3.91%).

Keywords: Helminths, Ruminants, Kirkuk,
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مدى انتشار بعض الديدان الطفيلية لدى المجترات المذبوحة في مجزرة كركوك، كركوك العراق

محمد عبدالعزيز قادر* و سوزان عادل رشيد**

* كلية الطب، جامعة تكريت، **المعهد التقني / كركوك، العراق

الخلاصة

أجريت دراسة رجعية في عام ٢٠٠٣ لبيان مدى انتشار الأكياس المائية,حلزون الكبد وديدان الرئة لدى الضأن والمعز والأبقار والجواميس المذبوحة في مجزرة كركوك. كان عدد المجترات المذبوحة في مجزرة كركوك كان الضأن (٤٠٢٣٣) والمعز (٩٢٢٣) والعجول (٩٥٧٧) والأبقار (٢٨٥٥) والجواميس (٥٠). وجدت أعلى نسبة للأكياس المائية في الأبقار (٣٨و٤%) يعقبها الضأن (١٧و١%) والعجول (٥٢و٠%) والمعز (٣٢و٠%) على التوالي. وإن نسبة حلزون الكبد وجدت في الضأن (٥٠و٠%) والمعز (٤٣و.%) والأبقار (٢,٦٣%) و ٢ (٤%) وفي ٥٠ جاموس مذبوح و لم يشاهد ديدان حلزون الكبد في العجول. وإن إنتشارديدان الرئة كان في الضأن (٥٥و٠%) والمعز (٠,٢٢%) والأبقار (٩٨و٢%) . ولم تظهر أي حالة في العجول والجواميس. وبألأضافة إلى ذلك وجدت تغيرات موسمية في نسبة إصابة الديدان في مجزرة كركوك. و كانت الأكياس المائية في الضأن والأبقار أعلى في الخريف (٩٧و١%, ٣٣و٨%) على التوالي, في المعز كان أعلى في الشتاء (٠١و١%) بينما في العجول كان أعلى في الربيع (٢٤و١) يعقبها الشتاء (٨٤و٠%). وعن نسبة حلزون الكبد في الضأن والمعز كان أعلى في الشتاء (٨٨و٠،٦٨و٠ %) على التوالي

بينما في الأبقار كان أعلى في الخريف (٠و٥%) يعقبها الشتاء (٨٠و٢%). في الضأن والمعز نسبة ديدان الرئة كانت أعلى في الشتاء (٨٨و٠%, ٠٨و١%) على التوالي بينما في الأبقار كان أعلى في الخريف (٠و٥%) يعقبها الشتاء (٩١و٣%).

Introduction

It is impossible to give an accurate estimate of the economic importance of parasitic disease because it varies so greatly between countries and between regions.

There are few published data from Iraq on the incidence of helminthes of slaughtered animals. Fasciola hepatica is reported in the north and north-east of the country (1). The specimens of *Fasciola hepatica* and F. gigantica were collected from sheep and goats (2 & 3). Lymnacid vectors snails of *Fasciola gigantica were reported in Iraq (4). Cysticercus bovis* in the liver of buffaloes is found in the abattoir at Mosul (5). It is shown that the rate of hydatid disease in Middle Euphrates Area in sheep and cattle was 3.19% during the period from 1987-1991 (6).

It was reported that out of 846 sheep examined in Mosul abattoir, 27% were found to be positive for lung worms. It was found that *Dictyocaulus filaria* was the most common species with few cases of *Protostrongylus sp.* Medium to heavy infestation was recorded during winter (7).

The present study was carried out to show the incidence of Fasciola, Hydatid cyst and lung worm among slaughtered ruminants in Kirkuk abattoir during 2003.

Materials and methods

The study was conducted in Kirkuk city, Iraq which is located in the north of the country, with a population about one million.

The investigation was carried out on ruminants (sheep, goats, calves, cattle and buffaloes) at Kirkuk abattoir which is situated at the eastern part of the city, it is consists of two main halls. The first one for sheep with a capacity of slaughtering 300 sheep a day and the second one for cattle with a capacity of slaughtering 150 cattle. In addition to that there are two rooms, one for veterinary authorities and the second one for changing clothes.

All animals came from the north part of the country and were of local breeds and slaughtered by Islamic method.

The liver and lungs of 40233 sheep, 9223 goats, 9577 calves, 2855 cattle and 50 buffaloes slaughtered from beginning of January to end of December 2003, were examined thoroughly by naked eye by official veterinarian to show the incidence of hydatid cysts, liver flukes and lung worms.

Results

Table 1, indicates that the total number of sheep, goats, calves, cattle and buffaloes slaughtered in Kirkuk abattoir in year 2003 were 40233, 9223, 9577, 2855 and 50 respectively. It is also shown that the number of ruminants slaughtered varies in different seasons. The number of sheep slaughtered was highest in winter followed by summer, spring and autumn, while the number of goats slaughtered was lower than sheep, the highest was in summer followed by autumn, winter and spring.

The number of calves slaughtered was highest in winter followed by summer, autumn and spring. The number of cattle slaughtered was lowest than sheep, goats and calves. In addition to that only 50 buffaloes were slaughtered; 15 in winter, 12 in both spring and summer and 11 in autumn.

It is revealed in Table 2, that the rate of hydatid cysts, liver flukes and lung worms in sheep was (1.17%), (0.50%) and (0.55 %) respectively, while in goats were (0.32%), (0.43%) and (0.22%). In calves hydatid cysts were detected in (0.52%), but liver flukes and lung worms were not detected, while in cattle the rate of hydatid cysts was (4.38%), lung worms (2.98%) and liver flukes (2.63%) respectively. In buffaloes 1 case (2%) hydatid cysts and 2 cases (4%) of liver flukes were observed and no lung worms were detected..

The distribution of helminthes infection according to seasons is shown in Table (3). In sheep, the highest rate of hydatid cysts was in autumn (1.97%), followed by winter (1.36%), summer (0.90%) and spring (0.43%), while the highest rate of liver flukes was in winter (0.88%), followed by autumn (0.58%), summer (0.30%) and spring (0.11%). The distribution of lung worms was highest in winter (0.88%), followed by autumn (0.58%), summer (0.40%) and spring (0.22%) respectively.

In goats, hydatid cysts was highest in winter (1.01%) followed by spring (0.50%), autumn (0.16%) and summer (0.09%), while liver flukes were highest in winter (0.68%) followed by summer (0.45%), spring (0.36%) and autumn (0.33%). The lung worms were only observed in winter months (1.08%) and autumn (0.13%). In calves, only hydatid cyst was observed in winter (0.84%) and spring (1.24%) months.In cattle, the distribution of hydatid cysts was highest in autumn (8.33%) followed by winter (6.15%), summer (1.62%) and spring (1.15%). The highest rate of liver flukes was in autumn (5.0%) followed by winter (2.80%), spring (2.30%) and summer (1.08%). It was

Table 1. The number of ruminants slaughtered in Kirkuk abattoir during 2003.

Months	Sheep	Goats	Calves	Cattle	Buffaloes
December	1926	369	719	87	1
January	5285	674	1269	490	12
February	5251	435	986	317	2
Total (Winter)	12462	1478	2974	894	15
March	3603	272	831	161	7
April	2290	379	541	95	3
May	3289	745	650	178	2
Total (Spring)	9182	1396	2022	434	12
June	3710	1274	805	326	3
July	3195	1112	867	285	3
August	3039	914	853	316	6
Total (Summer)	9944	3300	2525	927	12
September	2609	893	688	278	8
October	4257	925	733	192	2
November	1779	1231	635	130	1
Total (Autumn)	8645	3049	2056	600	11
Overall total	40233	9223	9577	2855	50

Table 2. Incidence of some helminth infections among slaughtered ruminant in Kirkuk abattoir in 2003.

	Overall total slaughtered	Overall total infection					
		Hydatid cysts	%	Liver fluke	%	Lung worm	%
Sheep	40233	470	1.17	200	0.5	220	0.55
Goats	9223	30	0.32	40	0.43	20	0.22
Calves	9577	50	0.52	0	0	0	0
Cattle	2855	125	4.38	75	2.63	85	2.98
Buffaloes	50	1	2	2	4	0	0

Table 3. Distribution of helminthes infection according to seasons

Animals	Winter			Spring			Summer			Autumn			Total		
	H	F	L	H	F	L	H	F	L	H	F	L	H	F	L
Sheep No.	170	110	110	40	10	20	90	30	40	170	50	50	470	200	220
%	1.36	0.88	0.88	0.43	0.11	0.22	0.9	0.30	0.40	1.97	0.58	0.58	1.17	0.50	0.55
Goats No	15	10	16	7	5	0	3	15	0	5	10	4	30	40	20
%	1.01	0.68	1.08	0.50	0.36	0	0.09	0.45		0.16	0.33	0.13	0.32	0.43	0.22
Calves No	25	0	0	25	0	0	0	0	0	0	0	0	50	0	0
%	0.84			1.24									0.52		
Cattle No	55	25	35	5	10	10	15	10	10	50	30	30	125	75	85
%	6.15	2.80	3.91	1.15	2.30	2.30	1.62	1.08	1.08	8.33	5.0	5.0	4.38	2.63	2.98
Buffaloes	1	1	0	0	1	0	0	0	0	0	0	0	1	2	0
No %	6.66	6.66			8.33								2.0	4.0	
Total No.	266	146	161	77	26	30	108	55	50	225	90	84	676	317	325

H=Hydatid cysts, F=Liver flukes, L=Lung worms

revealed that lung worm distribution was highest in autumn (5.0%), followed by winter (3.91%), spring (2.30%) and summer (1.08%).

In buffaloes, one case of hydatid cyst (6.66%) was seen in winter and two cases of liver flukes were seen, one in winter (6.66%) and other in spring (8.33%).

In general the total number of hydatid cysts, liver flukes and lung worms observed in all slaughtered animals were 676, 317 and 325 respectively.

Discussion

The epidemiology of helminthes diseases complex involves a balance between the infection rate and the resistance of the host. Accordingly in both temperate and tropical areas, young animals are particularly liable to develop heavy infection. However, there is a marked difference in the seasonal incidence of the disease between those tropical areas in which the climate includes a long hot and dry season and those in which the dry season is short or absent.

The results of this study showed that sheep are the most common ruminants slaughtered in Kirkuk slaughter house, followed by calves, goats and cattle. Buffaloes are rarely slaughtered in this province.

Regarding the distribution of parasitic infections in Kirkuk province, it is found that the rate of hydatid cysts, liver flukes and lung worms was highest in cattle, followed by sheep and goats. In calves only hydatid cysts were detected while in buffaloes liver flukes were seen.

The highest rate of hydatid cysts in this study among cattle was (4.27%) which is higher than sheep and calves which might be due to most sheep and calves are slaughtered in early age, as most people in Kirkuk prefer meats of young animals.

The rate of hydatid cysts in the present study among slaughtered ruminants in sheep (1.17%), goats (0.32%) and cattle (4.38%) is lower than that reported in Baghdad (8) who reported the infection rate in sheep, goats and cattle were 29.5%, 25.6% and 13.9% respectively and (9) who found 4.5% in sheep and 5.0% in cattle in Baghdad slaughter house. While (10) reported 5.9% in sheep, 5.1% in goats and 4.9% in cattle. The infection rate in sheep and goats is also lower than that reported in Mosul province (11) who reported 9.76% in sheep, 3.12% in goats, but identical to our finding in cattle (4.34%). While in Arbil province (12), found 27.4% of goats and 22.3% of cattle were infected with hydatid cysts. The difference in the infection rate in different provinces might be related to geographical distribution, period of study and sample size.

In the present study, the rate of liver flukes in cattle (2.63%) was higher than sheep (0.50%), goats (0.43%). In buffaloes 2 cases were observed from 50 buffaloes slaughtered. The distribution of infection was lower than that reported by (2) who found the rate of infection in cattle and sheep was 27% and 7.1% respectively. The lower rate of infections in this study might be due to low rate of intermediate hosts (snails) in Kirkuk. It is well known that snails are widely distributed only in Al-Hawija district, Kirkuk province (7).

The lower rate of infection in calves than in cattle is also shown by others. In Babylon province (13) reported the rate of *Fasciola gigantica* increased with advanced age of animals. He found the rate of infection 3.4% in cattle less than two years old, while in cattle more than four years old was 59%. In buffaloes only 2 cases were reported from 50 examined.

The highest rate of lung worm infection was also in cattle (2.98%), followed by sheep (0.55%) and goats (0.22%). No cases were seen in calves and buffaloes. The finding of this study is much lower than that reported by other workers. In Mosul slaughter house (7) reported 27.3% in sheep, while in Baghdad province (3) found only 9.9% in sheep also.

Regarding the distribution of infections according to seasons, it is shown that the infection of hydatid cysts, liver flukes and lung worms were distributed during all seasons with their rate being high during autumn and winter months.

Comparing the finding of this study with that reported by other studies carried on in Iraq. In Basrah province (14) found the rate of *Fasciola gigantica* infection was highest in summer, followed by spring. In Babylon province (13) found the rate of *F. gigantica* was highest in summer and lowest in winter. In northern Iraq (7) reported lung worms throughout the year except in the summer months, with the highest rate in January, February and March.

The result of this study indicates that animal helminthes are of great public health and economic importance. As high number of hydatid cysts observed in this study which is a source of infection to final host (dog and other carnivores) and transmit to human beings. The high number of helminthes infection lead to great loss of organs and carcass which are the source of animal protein, in addition to loss of production and performance of animals.

It is concluded that helminthes parasites are common in Kirkuk, Iraq.

It is recommended:

1- To carry on further studies to show the real distribution of infections.

2-A proper meat inspection should be performed on slaughtered ruminants in slaughter house.

3-To establish diagnostic laboratory in each slaughter house.

4- Efforts should be made to control the economic and public health importance helminthes infections.

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