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Prevalence of Hydatidosis in Sheep, Goats and Cattle from Arbil Province, Northern Iraq

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Abstract

The prevalence of hydatidosis was investigated in 1850 sheep, 975 goats and 470 cattle slaughtered in Arbil province between January and December, 1987. The prevalence rates of infection for these animals were 19.0, 56.8 and 13.6% respectively. The percentage of infected animals that had fertile cysts was 75.3% in sheep, 40.8% in goats and 32.5% in cattle. In general, older animals had higher infection rates than younger ones. The liver was the organ most commonly infected in sheep and goats, while in cattle more hydatid cysts were found in the lung than in the liver.

Key words: Hydatidosis, Ruminants, Northern Iraq.

Introduction

Hydatidosis is an endemic, zoonotic helminthic disease in the Middle East (Matossian *et al.*, 1977). Infection of Echinococcus larval stage in ruminant has been recorded in countries surrounding or near Iraq, such as Kuwait, Saudi Arabia, Jordan, Iran, Turkey and Lebanon (Mobedi *et al.*, 1971; Hassounah and Behbehani, 1976; Dajani and Khalaf, 1981; Guralp, 1984 and Al-Yaman *et al.*, 1985).

In Iraq, Imari (1962) found hydatid cysts in 42% of sheep, 40% of goats, 50% of buffaloes and 75% of camels. Babero *et al.* (1963) found that 29.5% of sheep, 13.9% of cows, 35.6% of buffaloes, 49.1% of camels and 26.6% of goats were infected. Al-Abbassy *et al.* (1980) found that 5.9% of sheep, 5.4% of goats, 4.9% of cattle and 20.4% of camels were infected. Wajdi and Nassir (1983) reported that 4.5% of sheep, 5.0% of cattle and 72% of camels were infected with hydatid cysts. Al-Saqur and Al-Jourani (1987) found that 44% of the sheep slaughtered at Basrah abattoir were infected with hydatid cysts. The most recent survey was carried out by Molan and Saeed (1988), in which they examined 370 goats and 323 cows during the period Sept.-Feb. 1986 and found that 27.4% of goats and 22.3% of cattle were infected in Arbil area, northern Iraq.

In the present paper we report on the prevalence of hydatidosis in sheep, goats and cattle slaughtered for human consumption in Arbil area, Northern Iraq.

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Materials and Methods

A total of 1850 sheep, 975 goats and 470 cattle slaughtered at Arbil abbatoir between January and December 1987 were examined for hydatid cysts. All organs of the viscera of the animals were subjected to careful macroscopical inspection and were palpated by hand. Examination were made twice weekly. The fertility of the cysts was determined by the microscopic examination of cyst fluid for the presence of protoscoleces, brood capsules and daughter cysts. Fertile cysts were clear, with protoscoleces showing muscular activity.

Results

The prevalence rates with hydatid cysts in 1850 sheep, 975 goats and 470 cattle are given in Table 1. The prevalence rate was higher in sheep (19%) than that in cattle (13.6%) and goats (5.9%).

The liver was the usual site of infection with hydatid cysts in sheep and goats, whereas in cattle

the lung was the most organ involved (Table 2). Occasionally the hydatid cysts were also found in the spleen, kidneys or mesentery. Of the 352 infected sheep, 138 (39.2%) had infected livers, 73 (20.7%) had infected lungs and 141 (40.1%) had infected both livers and lungs. In goats, 42.1% of the infected animals had infected livers, 26.3% had infected lungs and 31.6% had cysts in both livers and lungs. The livers were infected in 21 (32.8%) out of 64 cattle and 26 (40.6%) had infected lungs, whereas 17 (26.6%) showed cysts in both livers and lungs.

Table 1. The prevalence of hydatid infection in sheep, goats and cattle slaughtered in Arbil province, Northern Iraq

Animal	Total No. examined	Number infected	Percentage infection
Sheep	1850	352	19.0
Goats	975	57	5.9
Cattle	470	64	13.6

Table 3 shows the prevalence rates in the various age groups of male and female animals. In males, older age groups always had a higher infection rate than younger ones. This situation was also true for female sheep. In female goats and cattle, older age groups had a lower infec-

Table 2. Organ distribution of hydatid cysts recovered from slaughtered animals from Arbil area

Animal	Total No. infected	Number and percentage of animals having hydatid cysts in					
		Lung only		Liver only		Liver and lungs	
		No.	%	No.	%	No.	%
Sheep	352	73	20.7	138	39.2	141	40.1
Goats	57	15	26.3	24	42.1	18	31.6
Cattle	64	26	40.6	21	32.8	17	26.6

Table 3. The prevalence of hydatid infection in various age groups of male and female sheep, goats and cattle

Age group (years)	Percentage infected					
	Sheep		Goats		Cattle	
	Male	Female	Male	Female	Male	Female
1–2	2.4 (73)	0.0 (36)	0.0 (9)	0.0(6)	0.0 (29)	0.0 (35)
2–3	7.4 (552)	14.0(171)	12.9 (85)	15.1(53)	5.5(200)	4.8(207)
3–4	27.4 (674)	29.0(252)	13.3(173)	14.0(57)	6.7(313)	8.2(135)
4 & above	31.6 (38)	29.6 (54)	21.9 (41)	10.9(46)	8.3 (24)	6.3 (32)
Total	17.9(1337)	22.0(513)	13.9(308)	12.9(162)	6.0(566)	5.6(409)

Figures in parentheses refer to number of carcases examined.

Table 4. Location and fertility rates of hydatid cysts recovered from infected slaughtered animals

Animal	No. of cysts per location			Total no. of cysts	Mean	No. of fertile cysts	% of fertile cysts
	Lungs only	Liver only	Lungs & liver				
Sheep (352)	146	414	564	1124	3.2	846	75.3
Goats (57)	23	48	54	125	2.2	51	40.8
Cattle (64)	26	63	34	123	1.9	40	32.5

Figures in parentheses refer to number of carcases examined.

tion rate than younger ones. In goats and cattle, the males and females showed similar overall prevalence rates (14 and 13% in goats; 6 and 5.6% in cattle respectively). Female sheep showed higher overall prevalence rate than males (22 and 17.9% respectively).

A total of 846 (75.3%) of the 1124 cysts recovered from sheep, 51 (40.2%) of the 125 cysts recovered from goats and 40 (32.5%) of the 123 cysts recovered from cattle were fertile (Table 4).

Discussion

The prevalence rate of hydatidosis in sheep, goats and cattle slaughtered at Arbil abattoir was higher than that reported by Al-Abbassy *et al.* (1980) and Wajdi and Nassir (1983) from Baghdad area, but it was lower than that reported by Babero *et al.* (1963) and Molan and Saeed (1988) from Baghdad and Arbil areas respectively. The differences between the present results and that of Molan and Saeed (1988) may be related to the fact that the animals slaughtered at Arbil abattoir usually come from different provinces of Iraq and sometimes animals imported from neighbouring Turkey, so the prevalence rate depends on the region from which the animals had come.

The rate of infection in sheep was higher than that in cattle or goats. Also, the percentage of infected sheep that had fertile cysts was higher than that of other animal categories. These observations are consistent with those of Al-Abbassy *et al.* (1980) who noted that the infection rate and percentage of infected animals that had fertile cysts were higher in sheep than in cattle, goats or camels. On the other hand these observations seem in contrast with those of Dajani and Khalaf (1981) and Al-Yaman *et al.* (1985), who found that the infection rate and percentage of infected animals that had fertile cysts were lower in sheep than in cattle, goats or camels from Jordan. Our observation on the high fertility rate of cysts recovered from sheep is consistent with those made by Mahmoud (1980), who found that 64.3% of the cysts recovered from sheep in Mosul (Iraq) were fertile compared to 14.9% in goats, 14% in cattle and 10.5% in buffaloes. Similarly, Gusbi *et al.* (1987) reported that 73.1% of the cysts recovered from Libian sheep were fertile. The high sterility rate of cysts recovered from goats conforms to that of Islam (1982) in Bangladesh, who found that 74.9% of infected goats had sterile cysts. Also, our observations on cattle are consistent with the situation in Britain (Thompson, 1977) and in Australia (Kumaratilake and Thompson, 1982) in which bovine cysts are usually sterile.

The general trend of lower infection rate in younger age groups of slaughtered animals seen in the present survey is consistent with observations made by Al-Abbassy *et al.* (1980) Islam (1982) and Al-Yaman *et al.* (1985), and this may be related to the slow development of cysts. Gusbi

et al. (1987) reported that the prevalence rate seen in adult sheep was almost 45 times that observed in lambs. Gemmell (1961), in New Zealand, also found a very significant age correlated increase in the overall prevalence of hydatid disease in sheep.

The incidence and degree of involvement of different organs in the various animals was variable. While the liver was more involved than the lungs as a site for cysts in sheep and goats, the converse was observed in cattle. Similarly Al-Yaman *et al.* (1985) found that 64.3% of the cysts were in the lungs of goats and 57.1% of the cysts were in the liver of sheep from North Jordan. Gusbi *et al.* (1987) reported that the liver was the organ most commonly infected followed by the lungs in the Libyan sheep.

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