

Original Research Article

Epidemiological features of animal hydatidosis in Western Iran

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Abstract: Hydatid cysts, the larvae of the parasite *Echinococcus granulosus*, may lodge in any organ of intermediate hosts, namely, man and sheep. This study is representative of the necessity of more attention about the prevention and controlling of this disease in animals in order to decrease economical damages and possibility of transferring of this disease from animal to man. This study is a kind of descriptive study in which we have studied the infection conditions of the slaughtered animals in Paveh city, Kermanshah (West Iran) during 2011-2013. Lungs and livers were inspected in routine meat inspection procedures for the presence and number of hydatid cyst. Prevalence of hydatid cyst was calculated as the number of cattle or sheep and goat found to be infected, expressed as a percentage of the total number of cattle slaughtered. The 17190 sheep or goats and 2158 cattle were studied in the slaughterhouse of Paveh city, Kermanshah province, Iran, from 2011 to 2013. Of all sheep or goats, 187 cases (1.08%) had hydatid cysts and of all cattle, 42 (1.92%) had hydatid cysts. In sheep and goats, overall 177 cases (94.65%) had infected liver and 10 (5.34%) had infected lung. In cattle, 41 cases (1.29%) had infected liver and one case (0.04%) had infected lung. The results indicate that hydatid cysts have less prevalence in Kermanshah (Western Iran) than other areas. Cattle have more infection than sheep and goats to hydatid cysts and in more studies; liver has more infection than lung to this parasite.

Keywords: Hydatid Cyst, Liver, Lung, Cattle

INTRODUCTION

Echinococcosis is one of the major zoonotic parasitic diseases that occurs throughout the world and causes considerable economic losses and public health problems in many countries [1]. Both cystic and alveolar Echinococcosis has been reported from many areas. However, cystic Echinococcosis is more prevalent and has been reported from all countries in the Middle East and Arabic North Africa [2]. Lorestan is one of the important endemic focuses for the major zoonotic parasitic diseases like cystic hydatid disease where several species of intermediate host are commonly infected with *Echinococcus granulosus* [3].

This study is representative of the necessity of more attention about the prevention and controlling of this disease in animals in order to decrease economical damages and possibility of transferring of this disease from animal to man.

MATERIALS AND METHODS

This study is a kind of descriptive study in which we have studied the infection conditions of the

slaughtered animals in Paveh city, Kermanshah (West Iran) during 2011-2013. Lungs and livers were inspected in routine meat inspection procedures for the presence and number of hydatid cyst. Prevalence of hydatid cyst was calculated as the number of cattle or sheep and goat found to be infected, expressed as a percentage of the total number of cattle slaughtered. Information was collected using a questionnaire and all of the data were analyzed using IBM SPSS version 19.

RESULTS

The 17190 sheep or goats and 2158 cattle were studied in the slaughterhouse of Paveh city, Kermanshah province, Iran, from 2011 to 2013. Of all sheep or goats, 187 cases (1.08%) had hydatid cysts (Table 1) and of all cattle, 42 (1.92%) had hydatid cysts (Table 2).

In sheep and goats, overall 177 cases (94.65%) had infected liver and 10 (5.34%) had infected lung. In cattle, 41 cases (1.29%) had infected liver and one case (0.04%) had infected lung.

Table 1: The prevalence of infected organ for sheep and goats from 2011 to 2013

Year	Cases, n	Infected Cases, n (%)	Infected Organ, n(%)	
			Liver	Lung
2011	6100	85(1.39)	80(94.11)	5(5.89)
2012	5712	63(1.10)	62(98.41)	1(1.59)
2013	5378	39(0.72)	35(89.75)	4(10.25)

Table 2: The prevalence of infected organ for cattle from 2011 to 2013

Year	Cases, n	Infected Cases, n (%)	Infected Organ, n (%)	
			Liver	Lung
2011	683	15(2.10)	14(93.33)	1(6.66)
2012	845	14(1.65)	14(100)	0(0)
2013	630	13(2.06)	13(100)	0(0)

DISCUSSION

Hydatid cysts, the larvae of the parasite *Echinococcus granulosus*, may lodge in any organ of intermediate hosts, namely, man and sheep. Complete cyst removal is the treatment of choice; however, spillage of fertile cysts during surgery leads to disease recurrence that may be prevented by preoperative detection of the fertility status of the cyst [4]. The most common locations of cysts are in the liver and lung [5]. In a study [6], the prevalences of cystic echinococcosis in indigenous sheep, goats, cattle and camels from five regions of Jordan were investigated, from March to December 1992, they were found to be 12.9%, 12.7%, 0.9% and 11%, respectively. They were substantially higher in sheep from Karak (27.6%) and in cattle from central Jordan (18.0% in Amman and 14.3% in Sahab) than in the same animals in other regions. Co-infection of the liver and lungs was common in sheep and cattle. In a cross-sectional study [7], a total of 5381 slaughtered animals, namely 928 cattle, 243 buffaloes, 3765 sheep and 445 goats were inspected macroscopically for hydatid cysts in northwest Iran, with prevalence values of 38.3%, 11.9%, 74.4% and 20%, respectively, being recorded. Most cases which were condemned were seen in the lungs of sheep (13.4%) indicating that sheep are the most important intermediate hosts for *Echinococcus granulosus* in this area. The 40431 animals (6993cattle, 14084 sheep and 19354 goats) were slaughtered in the 5-year period from 2002 to 2006 in Lorestan (Southwest Iran). From this number 2885(7.13%) lung, 2885 (7.13%) livers and 1598 (3.95%) peritoneal cavity were contaminated by hydatid cysts. This study indicates that the highest prevalence of Hydatidosis was found in Aleshtar, Lorestan as compared to the rest of Iran ($p < 0.05$). Therefore, this study indicates that Aleshtar, Lorestan had the highest prevalence of Hydatidosis among different Iranian population and the rate of hydatid cysts increase in cattle and goat [3].

A study at Sari (North Iran) slaughterhouse during 1999 showed the infection rate of 14.7% in sheep, 2.7% in goats and 6.3% in cattle [8]. Other study in the western parts of Iran showed that 11.1% of the sheep, 6.3% of the goats, 16.4% of the cattle and 12.4%

of the buffaloes were infected with hydatid cyst [9]. A review study in Iran during 1985 to 2005 showed that infection rate in 7582 examined dogs for *Echinococcus granulosus* was 32.7% and also in livestock host the mean infection rate in 205161 sheep, 116840 goat, 54745 cattle, 1027 camel and 250 buffalo was 19%, 11.5%, 17.8%, 34.6% and 18.2%, respectively [10]. Taghavi *et al.*; [11] in Urmia (Northwest Iran), reported that the livers and lungs of 730 cattle slaughtered at abattoir between July and October 2012 were examined in routine meat inspection procedures for liver and lung hydatidosis. The infection rate of hydatidosis in cattle was 14.93% [11]. The findings of a study indicate that hydatid cysts are common in sheep and the fertility rate of cysts is quite high. Sheep play an important role in the life cycle of *Echinococcus granulosus* in this region [5]. A survey of cystic echinococcosis in the water buffalo (*Bubalus bubalis*) of the Italian Mediterranean breed was carried out in Campania, a region of southern Italy. Out of 722 water buffaloes examined for cystic echinococcosis, 76 (10.5%) were found infected. Seventeen buffaloes had hydatid cysts only in the liver, 34 only in the lungs, and 25 buffaloes had cysts both in the liver and in the lungs [12]. In our study, out of 17190 sheep or goats and 2158 cattle, 187 cases (1.08%) and 42(1.92%) had hydatid cysts, respectively. In addition, in sheep and goats, overall 177 cases (94.65%) had infected liver and 10(5.34%) had infected lung and in cattle, 41 cases (1.29%) had infected liver and one case (0.04%) had infected lung. Therefore, based on our study and other studies, Lung and liver are the more common infected organs for hydatid cysts and in different regions of the world including different regions of Iran, infection with hydatid cysts is more in cattle than sheep, but percentage of onfected organs is different in animals.

CONCLUSION

The results indicate that hydatid cysts have less prevalane in Kermanshah (Western Iran) than other areas. Cattle have more infection than sheep and goats to hydatid cysts and in more studies; liver has more infection than lung to this parasite.

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