

An Abattoir Survey of Hydatid and Liver Fluke Disease in Sheep and Cattle in Ardabil Abattoir, Ardabil State, Iran

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Abstract: To determine prevalence and intensity of hydatid and liver fluke disease in sheep and cattle in the district north-western of Iran, a seasonally survey was conducted in Ardabil abattoir located in the Ardabil province (North-western part of Iran) from 22 December to 20 March. A total of 19860 animals (cattle 5178; sheep 14682) slaughtered in the 3-month period and overall 4167 (20.98%) livers were condemned. The prevalence of liver infection due to fasciolosis, dicrocoeliosis and hydatid cyst was 24.46, 41.91 and 32.34% of total liver condemnations, respectively.

Key words: Ardabil survey, hydatid, liver fluke, sheep, cattle

INTRODUCTION

Fascioliasis and dicrocoeliosis is an infection caused by flukes commonly known as the sheep and cattle liver fluke disease. Hydatidosis is an important economic and zoonotic disease, caused by metacestode of adult worms of the genus *Echinococcus*. It commonly develops in dogs, although several other carnivores can also act as definitive hosts; ungulates are the intermediate hosts (McManus and Smyth, 1986).

Hydatid disease and liver fluke infection are of considerable and public health importance. There is no sound epidemiological data and evaluating liver fluke and hydatidosis incidence in livestock based on liver-condemnation can be useful in Iran. Information about infections of cattle, sheep with liver fluke in south-western Asia is limited to some countries such as Pakistan (Anwar and Chaudhri, 1984) Saudi Arabia and Turkey (Over *et al.*, 1992). We performed this survey to determine the prevalence of liver flukes and hydatidosis in abattoir populations of cattle and sheep in the part of north-western of Iran for the period of 3 month.

MATERIALS AND METHODS

A survey was conducted at the largest Ardabil abattoir (Ardabil province, north-western of Iran) from 22 December to 20 March 2004 to determine the status of hydatid disease and liver fluke disease in sheep and cattle. Daily condemnation records for cattle and sheep were used. Each liver from slaughtered animal was

examined in the course of process. Daily records for condemnation of organs including liver flukes hydatid cyst were confirmed on prepared data sheets. Diagnosis of flukes and hydatid cyst are done macroscopically based on gross appearance. Hydatid cysts were isolated from organs and after washing in tap water were preserved in 70% ethanol. Base on this Hydatid cysts were discriminated into 3 categories, fertile, viable and nonviable as adapted by Larrieu *et al.* (2001). They were characterized fertile if consisting protoscolices and germinal membrane; viable if containing germinal membrane only; nonviable if containing neither. The prevalence was collated on a monthly basis.

RESULTS

In this period 19860 animals were slaughtered in the abattoir. Dicrocoeliosis fasciolosis and hydatid cyst were diagnosed for 41.91, 24.46 and 32.34% of total liver condemnations within this period, respectively (Table 1). Dicrocoeliosis was responsible for the most prevalent among these disease. Incidence of hydatidosis in sheep, a total of 1065 out of 14680 livers examined were found infected with hydatidosis making overall percentage infection 34.99%. A total of 355 (31.50%) cattle liver were found infected with hydatidosis out of 95 examined. Fertility ratio of hydatid cysts overall prevalence of fertile, viable and nonviable hydatid cysts in sheep and cattle livers was 71.43, 17.64 and 18.42% and 56.14, 17.24 and 28.43%, respectively (Table 2).

Table 1: The liver-condemnations for liver flukes and hydatidosis from 22 December to 20 March 2004 in Ardabil, the north-western of Iran

	Total of organ examined	Total of liver condemnation	Fasciolosis (%)	Dicrocoeliosis (%)	Hydatidosis (%)
Sheep liver	14682	3042	21.6	40.35	34.99
Cattle liver	5178	1125	25.35	42.34	31.50
Total of animal slughtered	19860	4167	24.46	41.91	32.34

Table 2: Overall prevalence and fertility ratio of hydatid cysts in sheep and cattle in Ardabil, the north-western of Iran

	No. of organs examined	Hydatid cyst infection		Fertile cysts (%)	Viable cysts (%)	Nonviable cysts (%)
		Number	(%)			
Sheep liver	14682	1065	34.99	71.43	17.64	18.42
Cattle liver	5178	355	31.50	56.14	17.24	28.43

DISCUSSION

As can be seen from the database a considerable amount of knowledge has been accumulated on liver fluke infections and hydatid cyst in livestock reflecting the concern and interest for these infections in this region. We found high prevalence un-consistent with what others have found for this region. The reasons with regard to high prevalence of dicrocoeliasis within this region could be that there is not any proper treatments about affected animals using a drug of choice such as diamphenetide, any investigation which has been established through faecal examinations, wet climatic conditions and the effect that would have on the snail intermediate host in conjunction with a small awareness among farmers could be responsible factors. On the other hand, The eggs of dicrocoelium are greatly resistant and may survive for months even at -20 to -50°C. For fasciolosis a similar problems exists. Fertile hydatid cysts were predominant in our survey. However, in livers of sheep and cattle nonviable hydatid cysts were more predominant than viable cysts. Larrieu *et al.* (2001) studied that 63.8% of parasitized sheep presented viable hydatid cysts, 53.3% of which included fertile cysts. Gordo and Bandera (1998) observed over 80% viability of hydatid cysts in sheep of Spain. It is evidence that knowledge of the presence and extent of strain variation is essential if hydatidosis is to be controlled (Thompson, 1986). The phenomenon of strain variation is an important consideration in the future design and improvement of vaccines, diagnostic reagents and drugs effective against the Echinococcus organism (Bowles and McManus, 1993). Based on the accumulated material it is justifiable to consider liverfluke infections and hydatid cyst as an important regional threat to animal production in many developing countries. The infections should be controlled in herd health programs. In the absence of statistically sound epidemiological data, control programmes based on common sense, field observations and liver condemnation statistics may prove useful in the initial stages of control implementation. The best approach to the control of fascioliasis and dicrocoeliosis is by an integration of available control methods (Armour, 1975).

These are:

- The strategic use of flukicides in cattle and sheep to reduce pasture contamination with fluke eggs, that is Triclabendazole as a drug of choice for treating cases of fascioliasis in cattle and sheep (Taylor, 1987). It is the only anthelmintic effective against all stages of liver fluke in cattle and sheep.
- Improved drainage to eliminate the habitats of the snail.
- The use of molluscicides to limit snail populations. This survey makes a preliminary database for the future monitoring of these important parasitic diseases.

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