

Fertility of Hydatid Cysts and Viability of Protoscoleces in Slaughtered Animals in Qazvin, Iran

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Abstract

This study was conducted to estimate the fertility of hydatid cysts and viability of protoscoleces based on the location, size and type of cysts in slaughtered animals in Qazvin, Iran. Cysts were collected from the livers and lungs of 247 sheep and 275 cattle infected with hydatid cysts. Fertility of the cysts was assessed by examining the cysts' fluid for the presence of protoscoleces and the viability of the protoscoleces was determined using staining with an aqueous solution of 0.1% eosin. The highest and lowest rate of fertility was observed in hepatic cysts of sheep (81.05%), and cattle (1.27%) respectively. Most fertile cysts had medium size (45.03%), while the lowest fertility rate belonged to the small cysts (22.8%). Relationship between fertility of the cysts and type of infected organs, type of animals and size of cysts were significant ($p < 0.05$). The highest rate of viability was found in cattle's lungs (88.06%) and the lowest rate was seen in sheep's liver cysts (46.49%). There was significant difference in viability of fertile cysts between cattle and sheep organs ($p < 0.05$). Most of sterile, suppurative and calcified cysts were found in cattle's lungs (84.7%), cattle's liver (89.87%) and sheep's liver (6.58%) respectively.

In conclusion it can be said that fertility rates of liver and lung hydatid cysts of sheep and viability of their protoscoleces is considerable. In addition, although the fertility of cysts in cattle was low, but they had high viability rate.

Keyword: *Echinococcus granulosus*, hydatid cyst, fertility, protoscoleces, viability

1. Introduction

Cystic Echinococcosis (CE)/Hydatidosis is one of the most important zoonotic diseases caused by the larval stage of *Echinococcus granulosus*. It is a worldwide distributed disease and is prevalent mostly in countries that animal husbandry is common. CE is considered endemic in some regions of the world such as India, South America, Australia, and Middle East including Iran (Dueger & Gilman, 2001; Qaqish et al., 2003; Small & Pinch, 2003; Ahmed et al., 2006; Dopchiz et al., 2009; Pednekar, Gatne, Thompson, & Traub, 2009; Saeed, Kapel, Saida, Willingham, & Nansen, 2000; Jenkins, Allen, & Gouillet, 2008; Ibrahim, 2010). In Iran the rate of the infection in carnivores and herbivores such as sheep, cattle, and goat is significant. Also human infections are frequently reported from most parts of this country (Daryani et al., 2007; Ahmadi & Hamidi, 2008; Sadjjadi, Sedaghat, Hosseini, & Sarkari, 2009; Ahmadi & Meshkehkar, 2010; Shahnazi, Hejazi, Salehi, & Andalib, 2011; Dalimi et al., 2002; Mamishi, Sagheb, & Pourakbari, 2007). Hereby, hydatidosis is a major health-economic problem, that has become one of the WHO's active plans for controlling the disease (Vuitton, 1997).

Fertile hydatid cysts with viable protoscoleces in intermediate hosts are important factors in transferring of infection, and stray dogs that wandering around abattoirs, spread the disease due to feeding on infected organs. These factors which differ according to the geographical situation, host and type of infected organs, affect on *Echinococcus* cycle persistence (Vuitton, 1997). Therefore the aim of this survey was to evaluate the fertility of hydatid cysts and viability of their protoscoleces based on the site, size and type of cysts in slaughtered animals in Qazvin, central region of Iran.