Prevalence of Hydatidosis in Slaughtered Animals of South West of Iran

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Abstract: Echinococcus granulosus infection is a problem about public health issue in livestock-rearing regions in Middle eastern countries specially, Iran. A total of 70333 sheep, 22769 goats, 43231 cattle were examined for hydatid cyst infection in 10 large standard industrial slaughter house in 10 large cities of Lorestan province that located in south west Iran during 2011. Results indicated that In this period, 11,586 (8.4%) livers and 14,540 (10.6%) lungs were condemned totally for Echinococcus cyst lesions. Hydatidosis was responsible for 10.86 and 13.58% of liver and lung condemnations in cattles in this period; respectively that is the highest rate between all slaughtered animals. Location of hydatid cyst lesions in the carcases shows lung to be the most predominant site in all animal species with cattle having 5875 (13.58%), sheep 6665 (9.47%) and goats with 2000 (8.78%).

Key words: Hydatidosis • Slaughtered animals • Iran

INTRODUCTION

Hydatidosis is caused by the larva stage (Metacestode) of the dog tapeworm of Echinococcus granulosus (E. granulosus), [1, 2] which is one of the most important zoonotic diseases that leads to medical, veterinary and economic problems and constitutes a major public health issue that is prevalent in different parts of middle east specially Iran [3, 4].

E. granulosus has a great reproductive potential and requires two mammalian hosts. This parasite is transmitted in an anthropic cycle involving dogs as definitive hosts and responsible for the contamination of water and food and the risk to contaminate farm animals and human by dissemination of eggs [1-4].

In the other hand Hydatidosis in animals lead to significant economic loss of meat industry through condemnation of infected organs such as liver, lungs and other organs in apart from reduced quality of milk, meat and wool. These losses have economical significance effect in countries of low economic output where sheep production is particular importance like Iran [9, 10, 11].

The present work was conducted to determine the prevalence of E. granulosus in carcass of livestock as sheep, goat and cattle that slaughtered in Lorestan Province in south west of Iran.

MATERIALS AND METHODS

The present work performed on slaughterhouses of Lorestan province on south west of Iran that is a pathway of herds of the largest migratory sheep producers.

In this study, a total of 70333 sheep (Gazel, Kordi and Lori-Bakhtiyari breeds), 22769 goats (Maghozand Black Native breeds), 43231 cattle (Holstein, Brownswiss and Native breed) were examined for hydatid cyst infection at 10 slaughterhouses of 10 large standard industrial slaughter house in (Koohdash, Azna, Aleshtor, Nour Abad, Khorrram Abad, Boroujerd, Oshtorinan, Doroud, Aligudarz and Poldokhtar) cities of Lorestan province.
that located in south west Iran during 2011. The species of the animals, living region and organ location (lung and liver) of the cysts were recorded and each animal carcass was inspected by slaughter house veterinarians and tested for their health. At last infected organs include lung and livers that have cysts were taken to the laboratory and only metacestodes with viable protoscolices were recorded and used in the investigations.

For evaluation of viability of the protoscolices was assessed by motility of flame cells as well as ease of staining with 0.1% aqueous eosin solution and examination by a light microscope (Olympus BX40, Olympus optical Co., Ltd. Tokyo, Japan) [25].

And endall the date were analyzed by SPSS v16 software and Chi-square and Student’s t-tests were applied for comparison of the rate of infections in different Organs, species and seasons.

RESULTS AND DISCUSSION

Total of 136,333 animals slaughtered (70,333 sheep, 22,769 goats and 43,231 cattle) in the one year period from 20 Sept 2010 to 19 Sept 2011 (Table 1). In this period, 11,586 (8.4%) livers and 14,540 (10.6%) lungs were condemned totally for EC lesions. Hydatidosis was responsible for 10.86 and 13.58% of liver and lung condemnations in cattle’s in this period; respectively that is the highest rate between all slaughtered animals. Location of hydatid cyst lesions in the carcasses shows lung to be the most predominant site in all animal species with cattle having 5875 (13.58%), sheep 6665 (9.47%) and goats with 2000 (8.78%).

The seasonal prevalence rates for this parasite infection are shown in (Table 2) that shows the most prevalence in cattle at summer with 11.53% (1367) for liver infection and 16.1% (1743) in cattle lungs at spring but a meaningful full decrease are seen in both lung and liver infection at winter in all species in both liver and lung except the percent of infected lung with 7.13% in compare to spring with 6.58%.

There was significant association (p = 0.00) between the species of animals and infection.

Hydatid cyst disease is an important medical and veterinary problem in all over the world especially in Middle East countries that humans live with their farm animals in urban societies and migrate with their herds [4].

About this disease domestic intermediate hosts (cattle, camel, sheep, goats and buffaloes) are major reservoirs for the disease in humans by transmission of infective eggs of the cestode E. granulosus [9]. On the other hand Hydatidosis causes considerable economic loss in livestock due to condemnation of organs like lung and liver, Soit’s necessary to find reliable data for monitoring epidemiologic aspects of disease and prepare a base line data for future comparison to screen the infection rate [7].

According to results E. granulosus lesions of sheep in different regions has been reported in western Iran about 11.1% [4], but it was lower about 8.68% in this work and cyst were found in liver 7.89% and 9.47% lung.

Also 7.32 of the goats were found infected with hydatid cyst (5.86% of livers and 8.78% lungs), while the mean prevalence of infection in goats of western Iran has been reported 6.3% in earlier studies. Since goats feed
mainly by browsing, rather than grazing, they usually show lower rates of infection than other species but we have observed a higher considerable rate of infection than earlier studies [4].

About cattle 12.22% of the examined animals to be found infected with hydatid cysts (liver infection 10.86% and lung 13.58%), while the mean prevalence of infection in cattle of western provinces of Iran has been reported 16.4% [4] and this is the highest infection rate in all slaughtered species in this region. Some decrease in rate of infection in sheep and cow may related to increasing the awareness among farmers by governmental teaching by jahad agriculture, destruction of organs containing hydatid cysts and prevention of access of dogs to raw offals and national program to control of rabies that during this action, many stray dogs were eliminated [19].

In other middle east countries specially Iraq that have neighborhood the west of Iran borders, hydatidiosis had been reported, 4.3-13.9% in cattle, 4.5-44% in sheep, 3.1-26.7% in goats, [12, 4]. In the eastern part of Kuwait, 10.4% of sheep [13, 4], in Jordan 1.3-71.1% of sheep, 0.1-3.6% of goats and 1.3-12.9% of cattle [4, 14-17] and in Syria, 4.5% of sheep, 2.3% of goats and 5.2% of cattle [18, 4] were reported infected with E. granulosus. Generally the site of infection in livestock of Lorestan province, is similar to the other endemic zone in the west Iran and The most prevalence of hydatidosis infection is in lungs followed by liver in all species (Table 1), that is in agreement with similar studies reported that lungs were more frequently affected that liver [20, 21, 22] but against some surveys in middle east that in sheep was reversed [14-16].

In according to our data showed significant seasonal variation in prevalence of liver and lung condemnation in about cow, goat and sheep in all seasons (p<0.01). Highest prevalence of liver hydatidosis in summer for sheep and cattle also lung hydatidosis in summer and spring was observed in sheep and cattle respectively, but both lung and liver condemnation increase in fall. This changes about sheep and goats are related properly to increasing the number of slaughtered animals that supported by herds of migratory tribal people with comes to this province in summer and beginning of fall and they are in the risk of infection than other resistant herds and farms [23, 24, 26].

Considering the rate of infection and seasonally prevalence of infection in animals slaughtered in Lorestan slaughter house in this period, recommended that increasing the rate of knowledge in farmer and tribal men lead to preventing the hydatosis infection by cutting off its cycle. Also government ecological politics for extinct the stray dogs can be improve this process. At the end, although abattoir surveys have limitations, they are an economical way of gathering information on livestock disease that lead to human diseases and affect public health. Also, a feedback from the slaughterhouse to the individual farms of great value in the field of preventive medicine in social health care.

REFERENCES


