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Prevalence and Cyst Characterization Caused by Hydatid Cyst in Mizan Aman City Administration Municipality

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Abstract

A cross-sectional survey of bovine hydatidosis was conducted on cattle and sheep slaughtered at Mizan Aman city administration Municipal Abattoir from April, 2019 to June, 2019 to determine the prevalence and cyst characterization caused by hydatid disease. No statistical significant variation was observed with regards to place of origin and age of the animals [P > 0.05]. After postmortem examination, hydatid cysts were collected and cyst characterization was conducted. Out of a total of 438 animals examined, 41[10.68%] harboring one or more hydatid cyst. The result obtained from Postmortem examination indicated that the lung was the most commonly affected organ followed by liver. From the total of 41 cysts counted, 9[21.95%], 15[36.58%], 17[41.46%] were large, medium and small respectively and 6[14.63%], 30[73.17%] and 5[12.19%] were fertile, sterile and calcified respectively. Out 6 of fertile, 16% were viable, all from the lung and higher liver calcification were observed.

Keywords: Abattoir, Bovine, Carcass, Cysts, Hydatidosis, South Western Ethiopia

Introduction

Hydatidosis caused by the metacestode of Echinococuss granulosus is a widely spread parasitic zoonosis that had caused public health problems in many countries. Mechanical dysfunction of organs due to the cysts and anaphylaxis, as a consequence of the cyst burst and releasing fluid, is a serious manifestation in human. Even though hydatidosis has been known and documented in Ethiopia as early as 1970, it is still the major cause of organ condemnation in most Ethiopian abattoirs and lead to huge economic losses to the livestock industry. Several reports had indicated that hydatidosis is widely prevalent in livestock population of various regions of Ethiopia but its status was not known in Mizan Aman which is a city in south western part of Ethiopia where the hygienic conditions are poor and backyard slaughtering of domestic animals, raw beef consumption and feeding stray dogs with condemned organs are common practices. Keeping in view the public health significance of hydatidosis in cattle, the present study will undertaken to elucidate its prevalence, risk factors and economic significance in cattle slaughtered at Mizan Aman municipality abattoir, Ethiopia [1].

Hydatidosis are found in the small intestine of dog and other carnivores. The infective eggs containing the onconsphere passed in faeces are accidentally ingested by cattle, sheep, pigs other animals or human which act as intermediate hosts, the onconsphere in the eggs penetrate the intestine and reach the liver, lung and other organs including brain and muscles to develop in to hydatid cysts. The life cycle is completed when fertile hydatid cyst is eaten by a definitive host . The adult tape worm is comparatively harmless to the dog, although in large number enteritis may be seen. The pathogenesity of hydatid cyst depends on the severity of infection and organ in which it is situated and rapture of cyst may also cause total anaphylactic shock.

The epidemiology and control of hydatidosis is often considered to be a veterinary matter since the disease can be regulated by controlling parasites in animals. However, collaboration between veterinarians and public health workers is essential for the successful control of hydatidosis. Echinococcosis can be controlled through preventive measures that break the cycle between the definitive and the intermediate host. These measures include dosing dogs, inspecting meat and educating the public on the risk to humans and on avoiding feeding offal to dogs, as well as introducing legislation. The disease can be controlled successfully through health education and appropriate legislation only when people understand the life cycle of the parasite. It is of the utmost importance that the government be involved, through the Ministries of Health, Agriculture and the Interior, for example. So far, the only successful control programmes have been those where the Ministry of Agriculture has been the responsible control authority [2].

The country has been noted for a high prevalence of hydatid disease Since the 1970s. Moreover, reports of findings from abattoirs in various locations revealed that hydatidosis is wide spread in Ethiopia with great economic and public health significance. Moreover, no information is available about the status of hydatidosis in and around Mizan Aman city administration, in SNNPR. Hence it would be essential to have information on the status of hydatidosis and with regard to its occurrence from different parts of the country to establish appropriate strategy for prevention and control.

Therefore, the objectives of the current study were:

- To study the prevalence of Hydatidosis in Mizan Aman municipality abattoir.
- To indicate the control strategies of Hydatidosis.
- To assess the direct economic loss due to condemnation of visceral organs of cattle and sheep.

Materials and Methods

Study area

The study was conducted at Mizan Aman city administration municipality abattoir. Mizan teferi is a town in southern Ethiopia. The largest town, and the administrative centres of the Bench sheko zone of the southern nations, nationalities and peoples region[SNNPR], and located about 160kms south-west of Jimma, Mizan teferi has a latitude and longitude of 7°0' N 35° 35' E and an elevation of 1451m. Mizan teferi, together with the neighboring town of Aman, forms a separate woreda called Mizan Aman. This is surrounded by Debub Bench woreda [3].

Study Design

A cross sectional study design was used to examine the prevalence of bovine hydatidosis and its economic significance from April 24/2019-June 24/2019. During the period of study, five visits per week were made purposively out of five slaughter days in a week. A total of 438 cattle and sheep slaughtered at Mizan Aman municipality abattoir during the study period, were inspected. Post mortem examination was made through inspection, palpation and systematic incision of internal organs such as lung, liver, heart, spleen and kidney and the organ distribution and rate of infection of hydatidosis were recorded. The total number of mature cysts obtained per organ was counted and the cyst burden per organ was also recorded. The cysts were subjected to systematic size measurement [diameter] and classified as small, medium and large cysts and were subjected to fertility and sterility tests at Mizan regional veterinary laboratory.

Examination of cysts for fertility and viability

Based on the presence or absence of brood capsules containing protoscolices in hydatid fluid, cysts were identified and classified as fertile and infertile according to the method described by Macpherson [1985]. Infertile cysts were further classified as sterile [fluid filled cyst without protoscoleces] or calcified. To test the viability, the cyst wall was penetrated by a needle and opened and the contents were examined microscopically [40x] for the amoeboid like peristaltic movements of protoscoleces according to the standard procedure [4].

Economic Loss

To study the economic losses due to hydatidosis, only direct losses were considered and the calculation was based on condemned organs [liver, lungs]. In calculating cost of condemned edible organs, 12 different meat sellers, 1 meat inspectors and 6 residents were interviewed randomly to establish the price per unit organ and the average organ price was determined and this price index was used to calculate the loss. The economic significance of the parasite was determined by multiplying the average retail market price of the organs by the number of condemned organs.

Determination of prevalence rate

The overall Prevalence Rate [PR] was computed by dividing the number of animals inspected positive with hydatid cyst by total number of animals examined and expressed as a percentage as follows:

Results

Occurrence of hydatidosis

The occurrence of hydatidosis was 10.68% as 41 of 438 cattle were having hydatid cysts. Infection rate of the disease was correlated with the age, sex, and body condition of the animals. Chi square test showed that prevalence was significantly different [$p<0.05$] among young [6/41; 14.63%] and adult [35/41; 85.36%] cattle and among poor [13/41; 31.71%], medium [14/41; 34.14%] and good [14/41; 34.14%] body scores of animals.

Characterization of hydatid cysts

The result obtained from Postmortem examination indicated that the lung was the most commonly affected organ followed by liver. From the total of 41 cysts counted, 9[21.95%], 15[36.58%], 17[41.46%] were large, medium and small respectively and 6[14.63%], 30[73.17%] and 5[12.19%] were fertile, sterile and calcified respectively. Out 6 of fertile, 16% were viable, all from the lung and higher liver calcification were observed.

Discussion

Prevalence of hydatidosis varies from country to country or even within the country and has been reported by various researchers from developing countries under extensive production system. The present finding of 10.68% prevalence of bovine hydatidosis at Mizan Aman municipal abattoir is slightly lower than 16% prevalence of bovine hydatidosis reported at Wolayta Sodo municipality abattoir and 15.2% in Birre Sheleko and Dangila municipality abattoir. However, as per literature, bovine hydatidosis has been reported even at a prevalence rate as high as 31.44% in Jimma municipality abattoir, south west, Ethiopia.The discrepancy might be attributed to the strain difference of E. granulosus that exist in different geographical situations and other factors like difference in culture, social activity and attitude to dog in different regions. However, the variability in prevalence demonstrated in areas having similarity with the present study area may mainly be due to different stages of infection in the population at the time of examination and sampling strategy that was employed [5].

Conclusion

Bovine hydatidosis is a public health risk and causes considerable economic loss via decreasing livestock production and condemnation of offals in slaughter houses. The abattoir survey evidence of the present investigation showed that hydatidosis is prevalent in cattle population of Mizan Aman municipality area located in south western Ethiopia and may be a public health concern. Factors like presence of more stray dogs that visits the abattoir ground and fed on condemned organs, low public awareness about hydatidosis and backyard slaughtering favours the disease transmission in this area.

References

1. Ansari-Lari M (2005) A retrospective survey of hydatidosis in livestock in Shiraz, Iran, based on abattoir data during 1999-2004.Vet Parasitol 133:119-23.
2. Arene FAI (1995) Prevalence of hydatidosis in domestic livestock in the Niger Delta. Tropical Animal Health Prod 17: 3-5.
3. Bekele J, Butako B (2010) Occurrence and financial loss assessment of cystic echinococcosis (hydatidosis) in cattle slaughtered at wolayta sodo

municipal abattoir, southern ethiopia. Trop Anim Health prod 43: 221-228.

4. Craig PS (2017) Echinococcosis: Control and Prevention. Adv Parasitol 96:55-158.

5. Getaw A, Beyene D (2010) Hydatidosis: prevalence and its economic importance in ruminants slaughtered at Adama municipal abattoir, Central Oromia, Ethiopia. Acta Trop 113: 221-5.