

Prevalence of Hydatidosis in local sheep in Tobra city, Libya

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Received: 7/07/2021

Accepted: 29/09/2021

Abstract

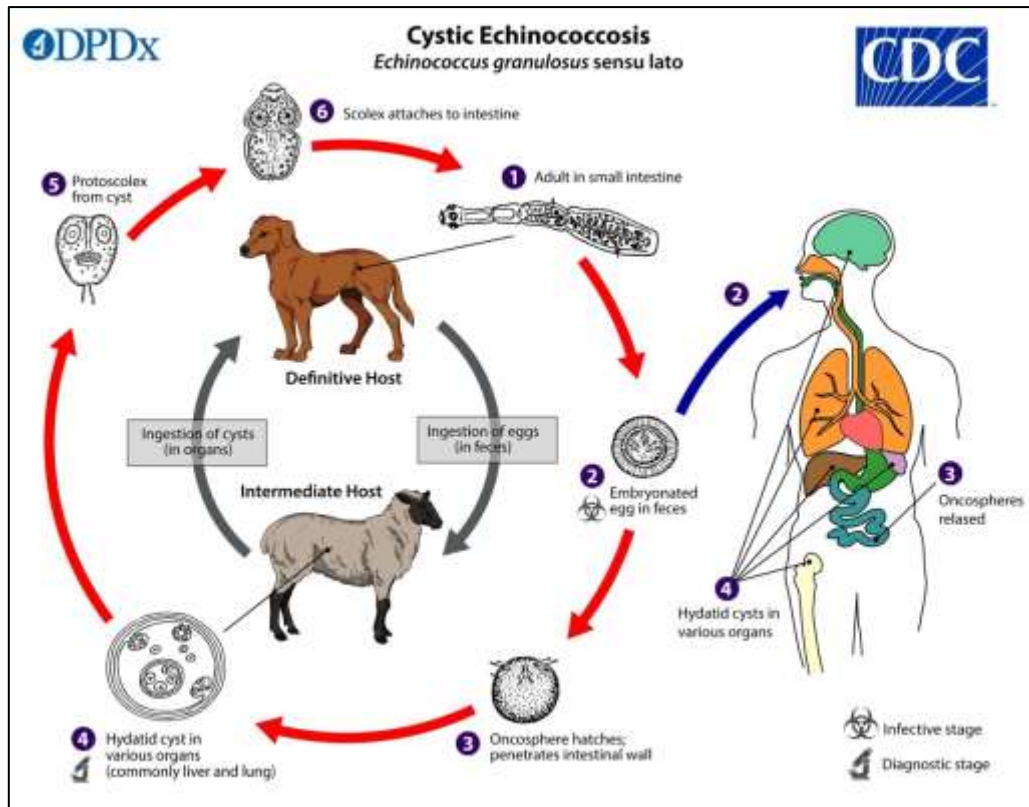
Hydatidosis/echinococcosis is parasitic disease caused by tapeworms of the genus *Echinococcus* (*Echinococcus granulosus*) and is considering as a serious problem in terms of general health or economy. The objective of current research was to show and summarize the available data on Hydatidosis in slaughter sheep in Tobra city. Samples were collected from different slaughter houses in the city, and the study was lasted from February to December, 2020. A total of 100 slaughtered sheep have been examined during the study period. Data were analyzed by chi square test. The results showed that infected sheep was 36% among the total animals ($P < 0.0001$). The infection was observed in the viscera, where the highest infection was 38.9%, 25%, 19.4% and 16.7% in the liver, lungs, intestine and heart, respectively. The infection in the liver was significantly ($P = 0.002$) higher than lungs, and was significantly ($P = 0.01$) higher in small intestine than that of heart.

Key words: *Echinococcus granulosus* , Hydatidosis, Echinococcosis, Tobra , prevalence.

Introduction

The literatures nowadays are more concern about animals' gut health. The prevalence of Hydatidosis is common worldwide, especially in the regions which closely related to dogs (Grosso *et al.*, 2012; Elmajdoub and Rahman 2015). The disease is considering as one of the important common parasitic diseases between humans and animals (Dakkak 2010). The main cause is *Echinococcus granulosus* (Yildiz and Gurcan 2003). The infection can be induce by swallowing the oocytes excreted by fecal of primary host (dogs) via consumption of contaminated vegetables or water (Dyab *et al.*, 2005), or via touching the infected dogs. The mature worm present on the intestines of dogs, wolves and foxes (Gdourra 2003).

Hydatidosis is a parasitic disease which can infect sheep, goats, cattle and camels (Sadjjadi 2006). Moreover, it can infect the humans and all are considering as an intermediate hosts for the parasite (Figure 1).



Source: ("Life cycle" Cystic Echinococcosis (*Echinococcus granulosus sensu lato*)). Retrieved on July 16 2019)

Figure (1): Life cycle of *Echinococcus granulosus*.

The infection may occur by the ingestion of oocytes of the mature worm. Then, the oncosphere hatches and penetrates intestinal wall (Islam *et al.*, 2012). Afterwards, the Hydatid cysts migrate via blood in various organs, commonly liver, lungs and intestines (Islam *et al.*, 2012).

Pastures, diets drinking water and contaminated grasses infected with dog's feces are considering the main reason in sheep infection (Cavagi6n *et al.*, 2005). It appears that sheep and goats are the most common intermediate host. However, the recent researches showed that camels are an important intermediate host as well (Magambo *et al.*, 2006).

The clinical symptoms in infected animals depend on the number size and location of cyst in sheep. Therefore, the clinical symptoms in sheep are limited because the economic life of the animal is short somehow (Eslami 1991). Although various organs are vulnerable to infection, liver and lungs are the most infected (Ceballos *et al.*, 2008).

Stray dogs are spread in the rural areas which consider as the main host of the *Echinococcus granulosus*. The developing countries lack in veterinary programs to control this disease which can be done by creating public health awareness, control stray dogs populations and restrict home slaughtering of sheep and other livestock.

The significance of the study is to detect the location of hydatidosis infection among the sheep. Therefore, the objective of the present investigation was to determine the current prevalence of hydatidosis in slaughtered sheep in Tocra city, north east of Libya.

Materials and methods

The average age of animals were about 1-1.5 years, collected in Tobra city from February to December, 2020. The examined sheep (*Ovis aries*) were males of the Libyan Barbary breed. The hydatid cysts were identified according to the descriptions of the veterinarians in the slaughtered animals (Figure 2). Samples were randomly collected, and was taken daily from slaughtered houses during the study period. The liver, lungs, intestine and heart were examined in each visit to the slaughter houses. Infected organs were selected and removed immediately after slaughtering. The hydatid cysts were selected depending on the number of cysts per organ in the laboratory.



Figure (2): Hydatid cysts in infected males of the Libyan Barbary breed.

Statistical analysis

Data were analyzed using IBM SPSS software, 20, and chi square test was applied to compare the differences of disease among sheep as well as their visceral. The confidence level of the test was 95% ($P < 0.05$).

Results and Discussions

Figure (3) shows the infection ratio of hydatidosis in sheep. The infection was 36% ($P < 0.0001$) with hydatidosis in the slaughtered sheep during the study period.

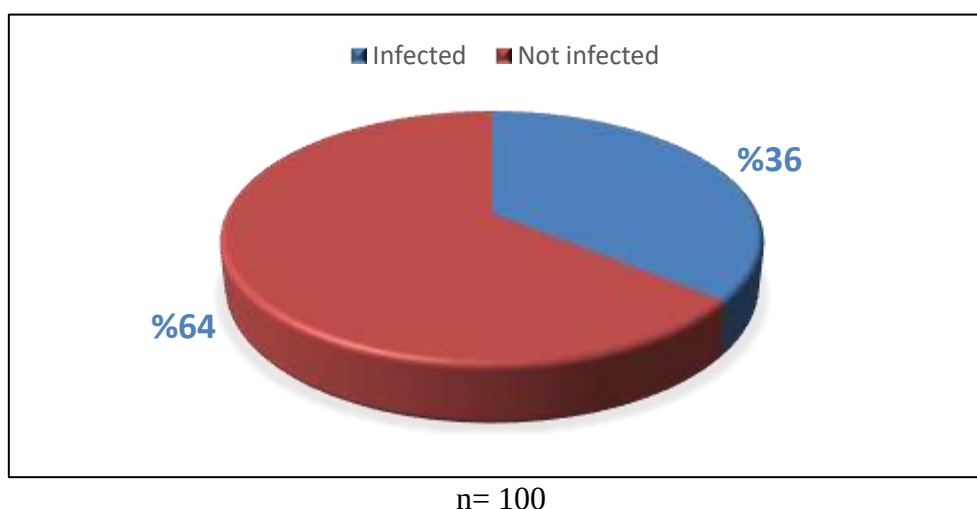


Figure (3): Infection rate of hydatidosis in local sheep.

The percentage of visceral infection in slaughtered sheep is presented in Figure (4). The highest infection was observed in liver, lungs ($P=0.002$), intestines and heart ($P=0.01$) by 38.9%, 25%, 19.4% and 17.7%, respectively.

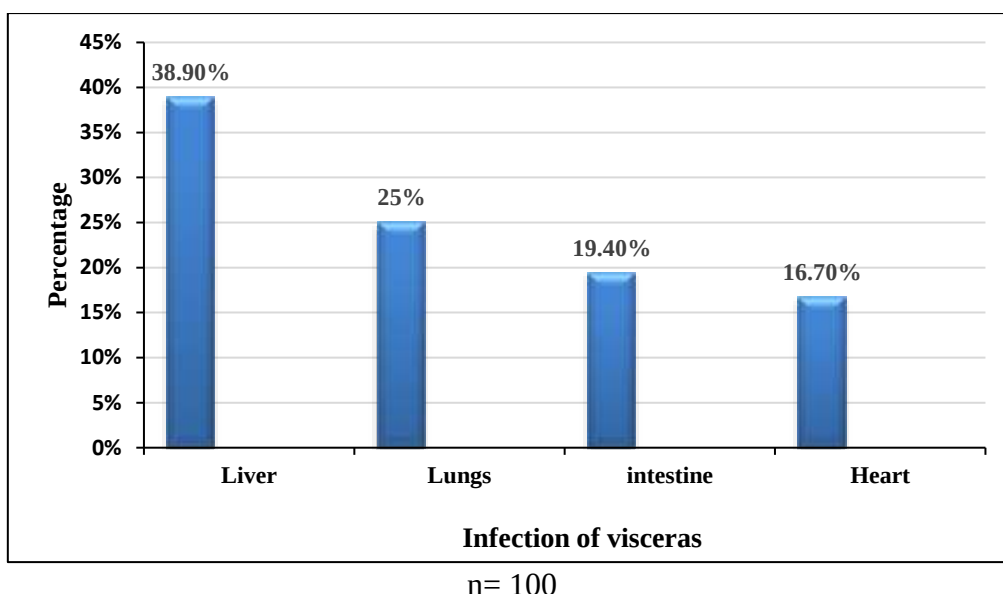


Figure (4): Infection rate of hydatidosis in visceral of local sheep.

The findings are consistent with (Gusbi *et al.*, 1987) in Libya and (Odongo *et al.*, 2018) in Kenya, who indicated to the prevalence of hydatidosis in sheep in which the cysts were 50.7% and 36.8% in liver and lungs, respectively. In addition, the results obtained by (Tashani *et al.*, 2002) and (Azlaf and Dakkak 2006) showed that the highest infection (46.7%) was observed in the liver of sheep than the lungs and other organs. In comparison among the species of animals, it was reported that the highest infection was about 80% and 20% in sheep and camels, respectively (Tashani *et al.*, 2002), whereas, the hydatidosis was not observed on cattle (Odongo *et al.*, 2018). However, (Elmajdoub and Rahman 2015) reported that the rate of infection was higher in camel compare to sheep.

Conclusion and recommendations

There are some important points to consider in order minimizing the infection of hydatidosis. These can be including slaughtering animals in authorized slaughter houses, banning the illegal slaughtering in cities and rural regions and get rid of mortalized animals by burn or burial. Additionally, control the dogs against slaughter houses, routine checkup for dogs, get rid of the stray dogs as well as create awareness against the risk of hydatidosis.

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معدل انتشار الإصابة بالأكياس المائية في الأغنام المحلية في مدينة توكرة - ليبيا

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تاريخ القبول: 2021/09/29

تاريخ الاستلام: 2021/07/7

الملخص:

تعتبر *Hydatidosis/echinococcosis* (عدوى المشوكة الحبيبية) مشكلة خطيرة لكل من الصحة العامة واقتصاد الأغنام في ليبيا، وهذا المرض يحدث نتيجة الإصابة من خلال تناول بيوض الديدان الشريطية من جنس المشوكات *Echinococcus* التي تدخل جسم الإنسان والحيوانات العاشبة عن طريق الفم، وهو مرض حيواني المصدر منتشر في أرجاء العالم كافة، خصوصاً في المناطق الريفية. تستعرض هذه الورقة وتلخص جميع البيانات المتاحة عن إصابة الأغنام في مدينة توكرة، حيث تم تجميع العينات من مجازر المدينة. استمرت هذه الدراسة الفترة الممتدة من شهر فبراير إلى شهر ديسمبر 2020، وخلال الدراسة تم فحص 100 رأس من ذكور الأغنام، حيث أظهرت النتائج المتحصل عليها في هذا البحث أن عدد الحيوانات المصابة 36 حيوان بنسبة 36% من العدد الكلي للحيوانات المذبوحة بمجازر المدينة. وظهرت الإصابة في الأحشاء حيث كانت أعلى إصابة في الكبد بنسبة 38.9% تليها الرئة بنسبة 25% تليها الأمعاء بنسبة إصابة 19.4% ثم القلب بنسبة 16.7%، وباستخدام اختبار مربع كاي X^2 لتحليل البيانات المجموعة أظهرت دلالات معنوية مهمة، وعلى ضوء النتائج المتحصل عليها تم وضع توصيات للحد من ارتفاع نسبة الإصابة بمرض الأكياس المائية بتتقيف المجتمع حول المرض وطرق الوقاية منه وكذلك السيطرة على الكلاب السائبة.

الكلمات المفتاحية: المشوكة الحبيبية، الأكياس المائية، توكرة، معدل انتشار.