PREVALENCE OF BOVINE CYSTIC ECHINOCOCCOSIS IN SLAUGHTER ANIMAL HOUSE IN BABIL, IRAQ

Karrar Jasim Hamzah¹, Alaa Kamil Mahmood², Ameer Ridha Dirwal³ and Qassim Abbas Mohammed⁴

¹Department of Internal and Preventive Veterinary Medicine, College of Veterinary Medicine, AL-Qasim Green University, Babylon, Iraq.
²Department of Internal and Preventive Veterinary Medicine, College of Veterinary Medicine, University of Baghdad, Baghdad, Iraq.
³Department of Pathology and Poultry, College of Veterinary Medicine, AL-Qasim Green University, Babylon, Iraq.
⁴Ministry of Agriculture, Veterinary Directorate, Babylon, Iraq.

Abstract
Cystic hydatidosis is considered an internationally and epidemic disease in Iraq and the vast majority of Mediterranean nations, prompts wellbeing and economical issues. Iraq is considered as one of the most epidemic locales notably its southern and center districts that most progressive by farmers. The present study conducted (2800) cow examined in Al-Hilla and AL-Qasim slaughter house animals from 15.04.2018 to 15.10.2018. The aim of present study was to investigate the infection rates of Echinococcus granulosus in cow. A total of 2800 cow was used in this present research. The results showed that 145 cow (3.81) were infected. The infection rate was higher in females than males significantly. The lung of cow revealed a slightly higher infection rate of hydatidosis than the liver, with 2.05 % and 1.76 % in the lung and liver respectively.

1. Introduction
The Hydatid cysts disease is a chronic zoonotic parasitical disease, that caused by larval stage of the parasitic worm of Genus Echinococcus granulosus, which contain four importance medical species in which have same pathogenic and epidemic characteristics (Ansari-Lari, 2005). The cysts are round (ball-shape) filled with a bright fluid contain a protozoal, tiny in size cysts, and highly dangerous when cysts ruptured (Ray and Ryan, 2004). Echinococcus granulosus life cycle is complex included in the intermediate host "herbivores" then definitive host "carnivores" (Berihu and Toffik, 2014). The mature tapeworm in intermediate stages habitat carnivores within small intestine having inclination the lung, kidney, spleen liver and in the myocardial muscles of herbivores (Haridy et al.,...
2006). Herbivores are tainted via eating of eggs of grown-up worms go in excrement of canines, which incubate to oncosperes, enter the intestinal cover wall and move through the circulatory system to their preference destinations where they create as moderate developing growths (Wahlers et al., 2012). The cysts applying compression to the effected organs lead to pathological changes (Büyük et al., 2005). The disease has widely dispersion around the world, and to be especially in undeveloped nations, including the Mediterranean area, in any case, the best pervasiveness of Hydatid disease in animals is found in nations of the calm zones, including focal Asia (Iraq), China, parts of Africa and Australia (Yang et al., 2005; Ali and Al-Shirifi, 2012). These parasites cause a direct economical misfortune to domesticated animals attendants as they decrease milk yield, lessen weight and reduce in fertility because of infection (Sariozkan and Yalcin, 2009). Because of the wide-spread of the disease in gainful creatures, it is delegated an infection that causes critical monetary misfortune (Jawad et al., 2018). This misfortune happens because of the destruction of the liver and lungs, furthermore, other influenced organs, with hydatid sores (Gerazounis et al., 2002; Al-Shabhani, 2014).

2. Materials and Methods

The examination study was directed in cow in the Babil area from 15.04.2018 to 15.10.2018. The investigation depended on insights were taken the perceptions visits to AL-Hilla and AL-Qasim abattoir. Altogether, 3800 butchered dairy cow were analyzed. The butchered examined were of different breeds and diverse ages. The examination of the hydatid growth was situated in the liver and lung, and the measure of the pimples and spread spots by visual examination and palpation. Then, a surgical blade was utilized to separate them from other comparative sores, for example, pimples and tumors. The spacemen take from slaughterhouse from liver and lungs that contaminated by Echinococcus granulosus were fixed in 10% support formaldehyde. After plainly visible examination of the organs, little examples including the hydatid cysts were taken from the contaminated organ and exchanged to a perfect holder with 10% formalin also, to the research laboratory of the veterinary medicine college laboratory at the Al-Qasim Green University where all the laboratory tests (cysts examination and histopathological slides) were performed. The results were analyzed using the SPSS statistical program. A Chi-square test was used to assess the association between the variables’ percentage results. A P value of p≤0.05 was considered to be significant (Sas, 2001).

3. Results

A total of 3800 cow were slaughtered in the tow abattoirs in the 6 months of study period. The Table - 1 shows the total number of cow slaughtered in the two abattoirs during the study period. Out of these were, 39% (1482/3800) males and 61% (2318/3800) females, the infection rates to be 30.34% and 69.65% in males and females respectively from total infected cow. In Table - 2, there was a significant statistical difference between infections among gender (P<0.05). From this, 145 cows were infected with hydatidosis in either the lung or the liver giving a total infection rates be 3.81% (145/3800). The lung observed to be slightly higher infection rates (2.05%) than the liver (1.76%) with non-significant differences Table - 3.

Morphological characterisics of E. granulosus

Echinococcus granulosus are Measures 3 – 5 mm long and Body devided into: Scolex having 4 suckers, furnished with 2 columns of snared rostellum bearing around 22 - 28 hooklets. Short neck. The extent of the gravid portion is more than a half of the body length. The uterus is unbranched. Genital pore is situated behind the center line of gravid portion.

Table - 1: Number of slaughter cow in different abattoir

<table>
<thead>
<tr>
<th>Slaughter house</th>
<th>Slaughtered cow</th>
<th>Infected</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL-Hilla abattoir</td>
<td>3040</td>
<td>111</td>
<td>3.65a</td>
</tr>
<tr>
<td>AL-Qasim abattoir</td>
<td>760</td>
<td>34</td>
<td>4.47a</td>
</tr>
<tr>
<td>Total</td>
<td>3800</td>
<td>145</td>
<td>3.81</td>
</tr>
</tbody>
</table>

Similar letters represent non-significant differences.
Table - 2: Infection rate in cow according sex

<table>
<thead>
<tr>
<th>Sex</th>
<th>Total Slaughtered cow</th>
<th>Total Infected</th>
<th>Infected</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>1482</td>
<td>145</td>
<td>44</td>
<td>30.34a</td>
</tr>
<tr>
<td>Females</td>
<td>2318</td>
<td></td>
<td>101</td>
<td>69.65b</td>
</tr>
</tbody>
</table>

Different letters represent significant differences.

Table - 3: Infected rates in liver and lung of total slaughtered cow

<table>
<thead>
<tr>
<th>Animal</th>
<th>Slaughtered cow</th>
<th>Liver</th>
<th>%</th>
<th>Lung</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cow</td>
<td>3800</td>
<td>67</td>
<td>1.76a</td>
<td>78</td>
<td>2.05a</td>
</tr>
</tbody>
</table>

Similar letters represent non-significant differences.

Figure - 1: Microscopic examination show *Echinococcus granulosus* are Measures 3 – 5 mm long and Body partitioned into: Scolex. Short neck. what's more, the uterus

Figure - 2: *Echinococcus granulosus* cyste scolices of in Liver (hydatid growth)
Figure - 3: Microscopic examination show *Echinococcus granulosus* within 2 round about columns of snares and scolex bears 4 sucker

![Image of microscopic examination showing Echinococcus granulosus](image)

Figure - 4: Scolices "Onchsophere" under microscopic examination

4. Discussion

Various investigations have inspected the spread of hydatidosis in Iraq and have reported that its pervasiveness has expanded in animals breeding zones as of late because of an absence of intermittent tests for mutts and weakness care for animals. The disease is endemic in natural regions where hounds, domesticated animals and people are discovered together, as this course of action enables the parasite to finish its life cycle (Varcasia et al., 2011). The after effects of the present examination recognized hydatid infection in 3.81% of all study results. The present results agreed with Wyckliff and Chepkirui (2017) in Kenya, who found the infection rates to be 3.5%. The results were higher the results of Jawad et al. (2018) in Holy Karbalaa and with which observed the rate to be 0.55%. The results also higher than results of those Dyab et al. (2005) in Egypt. Additionally, the present results were lower than other results 15% in Libya Kassem et al. (2013) and in Ethiopia to be 35.5% (Fromsa and Jobre, 2011). The geological area of the sites and its ecological conditions will assume to be effects as temperature and moistness are viewed as imperative factors influencing the existence cycle of *Echinococcus granulosus* and egg incubating (Grosso et al., 2012). Furthermore, an absence of standard wellbeing investigations, high quantities of butcher outside slaughterhouses, inability to isolate contaminated cadavers in slaughterhouses and default the contaminated cadaver, and an inability to keep the remains being taken by stray pooches will expand the spread of contamination (Fikire et al., 2012). The issue can be further exasperated by the nearness of substantial quantities of stray dogs in the zone joined by an absence of assessment for parasites and against parasite treatment (Stewart et al., 2013). The methods for creature cultivation of parasite will impact transmission, for example, permitting free brushing for domesticated animals, enabling canines to go with the groups in the field and the decision of eating routine. At long last, the period of butcher slaughter out of abortior, the nature infection of their meat: this brief period keeps the hydatid cystes to development, as six to eight months are expected to end up cystic hatchlings (Mohammed, 2004).

The liver and the lung were the main organs have neen observed to be infected in this investigation and this could be ascribed to their inclination of blood supply, this organs have a thick system of vessels with little lumen measure where incipient organisms of Echinococcus parasite hatchlings hold up what’s more, form into growths (Esatgil and Tüzer, 2007).

The study demonstrated that the rate of infection differed, there are significant differences among the sex of the slaughtered cow. The most astounding rate of disease in slaughtered female cow than males. The fact that the general population there wanted to slaughter females, particularly the most established females than
young. The results of present investigation are in line with the findings results of Ibrahim Ibrahim (2010) in Saudi Arabia and in Libya (Tashani et al., 2002). The higher infection rates in lung supported by study of (Jawad et al., 2018) who found that the lungs of cows was the first way to be contaminated with hydatid cysts while the livers were the second. This might be because of quality of a lower blood supply in the lung than in different organs (Al-Shabbani, 2014). Kebede et al. (2009) who mentioned that real organs judgments in abattoir were happened due to hydatidosis is lungs then liver. Also the tissue of cow liver is extreme and strong, making it difficult for the oncosphere to develop regularly, though, the lung tissue is smoother and softer, making it less demanding for the oncosphere to become quicker (Elmajdoub and Rahman, 2015).

5. Conclusion

The zoonotic parasitic disease of general wellbeing important, appropriate control measures should be included to be control the disease and lessen fatalities cases of human. Destruction of infected organs in the cows, burn them and not toss them outside the slaughterhouse so as not to transport.

Acknowledgment

We thank our colleagues and technicians at the veterinary clinical pathology laboratory of the College of Veterinary Medicine, Al-Qasim Green University, Iraq for their technical support. Special thanks to the staff of AL-Hilla and AL-Qasim veterinary hospital for their great help during the collection of samples.

6. References


©2019 Published by JPS Scientific Publications Ltd. All Rights Reserved
How to Cite this Article:


DOI: 10.22192/lsa.2019.5.1.1