Incidence of Hydatidosis in Slaughtered Animals and their Relation to Public Health at Baghdad Province

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Abstract

Hydatid cysts disease is an important public health problem and economic losses especially at developing countries such, Iraq. A study of incidence of hydatidosis in sheep and cattle, which are slaughtered food animals, was carried out at different areas of Baghdad province outside the government abattoirs, during a period of 18 months from November 2016 to May 2018. Both slaughtered livestock animals (sheep and cattle) which are local breed of both sexes, they are of difference areas in boundary at Baghdad city, and with ages having non descriptive features. Hand palpation and visual inspection were followed in this study. A total , 2594 carcasses were examined comprising 1632 sheep and 962 cattle, from these 33, 11 (sheep and cattle) respectively were found to harbour the cysts, recording percentages of (2.0%, 1.1%) respectively. The predominant location cysts at the liver (48.4%, 45.4%) in sheep and cattle respectively, next by the lungs , in sheep and cattle (39.3%, 36.3%) respectively. Next to the mixed organs (liver + lung), the incidence was (18.1%) in cattle and (9.0%) in sheep. The percentage of cysts in heart of sheep was (3.0%) but in cattle it was (0%) Zero. The results revealed that fertile cysts only, were present in sheep with (87.8%) fertility. Cysts in the organs ranged(1-13,2-7) in sheep and cattle respectively. It can be observed that , sheep play a major role for distributions the disease. Suggestive control measures and public health hazard were mentioned.

Keywords: *Hydatidosis; Incidence; Cyst; Abattiors; Fertility; Carcasses*

Introduction

Hydatid cysts disease or Hydatidosis is one of the silent helminthic zoonotic infection.The larval stage of cestode belonging to the genus *Echinococcus* (family teaniidae) was the main reason of the disease, which considers major public health problem [1] .

Cystic hydatidiosis is of worldwide distribution in the Mediterranean region, including countries of the Middle East [2] . The infected stage (Hydatid cyst) is the larval stage of the canine tapeworm found in the internal organs of infected herbivores [3,4] . Adult worms produce eggs which is passed with the dogs fecaes [7,8] . If eaten by herbivores or humans, the eggs hatch releasing larvae (oncosphere) that invade through, the intestinal wall and evolve to hydatid cysts [9,10] .

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The four types of medical E. and public health importance are; *E. granulosus* (which causes cystic echinococcosis), *E. multilocularis*. (which, causes, alveolar echinococcosis), *E. vogeli* and *E. oligarthrus* (cause polycystic echinococcosis) [11,12] .

Parasite is common in countries where dogs are close contact with humans, and where favourable conditions of life cycle of the parasite are available, as presence of wide variety of hosts, the lack of proper slaughter facilities [13] . The disease infects the livestock food animals, that causes, reducing of their production and high economic losses [14] . In Iraq Jarjes and Al-Bakri [15] . Said that the infestation rates of food animals species range between zero and 40% as a results of previous studies of local workers in Iraq. The present study was desigen to investigate the prevalence of hydatid cysts disease among slaughtered food animals (sheep and cattle) to provide some necessary required data of public health to prevent or at least to minimize the possible hazards of disease.

Materials And Methods

In this work a survey was carried out to determine the prevalence of hydatid cysts at different areas of Baghdad province where livestock food animals were slaughtered outside the government abattoirs during a period of (18 months) from November 2016 to May 2018. Regular visits were performed weekly to the places of animals slaughtering in which butchers men selling of meat. Most the animals slaughtered come from surrounding areas of rural region. A total of 2594 carcasses, comprising 1632 sheep and 962 cattle were examined during post-mortem inspection to identify hydatid cysts using perfect examination and search of cysts were done by visual inspection, hand palpation and incition of the organs which are; liver, lung, mixed organs (liver and lung) and heart. The hydatid cysts fluid was collected from individual cyst, washed by phosphate buffer saline and checked for the presence of protoscoleces, by sending the samples to the laboratory by suitable box and do centrifugation for the cysts fluid contents at 3000 RPM for 5 minutes, then microscopically examined for the detection of protoscoleces (Latif, et al (16). The cysts were recorded according to animal species, total number of examined animals, the number of animals harbouring hydatid cysts and the cyst location in the organs.

Results

The infection rates of cysts for both species that were slaughtered in different areas of Baghdad province was shown in table (1) .

A total of 2594 carcasses of slaughtered food animals were examined, comprising (1632) sheep and (962) cattle, of these numbers (33) sheep and (11) cattle were found to have the cysts, recording percentages (2%,1.1%) respectively. Table.(2) Showed the distribution of hydatid cysts in different organs; which revealed that, in sheep and cattle, liver was more commonly infected with hydatid cysts than the lungs and other organs, recording incidence of (48.4%, 45.4% respectively). In case of lung, in sheep and cattle the incidence (39.3%, 36.3%) respectively.However in mixed organs (liver and lung) the higher incidence was (18.1%) in cattle and lower in sheep (9.0%). The heart was only affected in sheep (3.0%) but in cattle it was none (0%).

The current study revealed that only sheep has fertile cysts (87.8%), while cattle, has sterile cysts these sterile cysts had calcified or caseated appearances.Table. (3) showed that the intensity of cysts was relatively high in sheep (1-13) cyst and less in cattle (2-7).And also the number and fertility percentage of cysts present in sheep and cattle.

Table 1: Number of examined carcasses of slaughtered animals that infected in this study.

Animal species	No. Examined carcasses (No.)	No. Infected Carcasses (No.)	Percentage Of infection (%)
Sheep	1632	33	2.0 %
Cattle	962	11	1.1 %
Total	2594	44	1.6 %

Table (2): Distribution of hydatid cysts at infected organs of infected carcasses.

Animal species	No. of Infected carcasses	Infected organs							
		Liver		Lung		Liver+lung		Heart	
		No.	%	No.	%	No.	%	No.	%
Sheep	33	16	48.4	13	39.3	3	9.0	1	3.0
Cattle	11	5	45.4	4	36.3	2	18.1	0	0

Table (3): incidence of fertile, sterile and intensity of hydatid cysts in contaminated organs.

Animal species	No. of Infected	Cysts status		Fertility (%)	Intensity of cysts
		Fertile	Sterile		
Sheep	33	29	4	87.8	1-13
Cattle	11	0	11	0	2-7

Discussion

Hydatidosis is more important and wide spread infection in the world. livestock species are more susceptible to infection by contamination through the viable eggs of Echinococcus granulosus [18] . Human risk for the cysts is by ingestion food or water contaminated with fecal material containing E.granulosus eggs passed from infected dogs [19,20] . In most studies dealing with the incidence of hydatidiosis in livestock, the main source of data is obtained from abattoirs [21] . In this study the data was obtained from different areas at Baghdad city or province where slaughtering animals carried out at the places outside the abattoirs, with absent of the veterinarians supervision. Cystic hydatidiosis was recorded early in Iraq by Babero *et al* [22] .

Adult worm i.e *E. granulosus* was reported earlier in the 1940 in the intestine of stray dogs [23] . As regards to the infection rate of hydatid cysts, the current study revealed that, the lower rates of infection in an examined slaughtered animals were relatively similar to the results of study conducted by Iraqi researchers [15] in Mosul city, [24] in Kirkuk.

The lower incidence in sheep was attributed to the nature of grazing that may be done Torgerson and Buke [25] but the lower incidence of infestation in cattle, is due to breed difference, no contact with source of infection [26] . Results of infection rates of this study were lower than those studies by a number of researchers in Iraq [27-32].

And also studies that were reported in some Arabian and neighbouring countries i.e Egypt [13], Jordan [33], Kuwait [34], Yemen [35], Iran [14] and Turkey [36].The main feature of the present work, is the small sample of animals slaughtered compared with previous local studies [27-32]. The variation of infection rates could be related to differences among strains of *E. granulosus* [21] .

Regarding to infection rates of organs involvement, the commonest sites of infection are, the liver and lung Markell *et al* [37] . Liver in sheep and cattle is the predominant location of the cysts followed by lung, mixed organs (liver+lung) and heart later. These results are relatively similar to that findings by Jarjes and AL-Bakri [15] . Muqbil et al [35] , in Aden, Yemen and Elmajdoub and Rahman [21], in Libya. The present study showed that, only sheep were found to harbour fertile cysts, while in cattle all the cysts were sterile.

All local studies mentioned above confirm that, fertility rate of cysts in sheep is higher than other livestock animals, so it is in agreement to the results of this study.

Variation in fertility rate among different intermediate hosts was, due to the difference in *E. granulosns* strains [39] . Sterile cysts of cattle in current study were similer to those studies by Al-Abassy *et al* [28] .In Iraq , Elmajdoub and Rahman [21], in Libya. The life cycle for parasite, disseminating the disease due to high infection rates and fertility. The recommended measures which are suggested to prevent or at least to minimize hydatidosis disease are. Rehabilitation and improve Baghdad abattoirs and abattoirs of the all provinces in Iraq, prevent slaughtering livestock animals outside the government abattoirs, make control programs for Standard meat inspection under supervision of veterinarians, control of dogs by killing stray dogs, vaccination against hydatid cyst disease in

sheep is advisable.

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