

الإصابة بمرض الأكياس العدارية بين الأغنام في محافظة بابل / العراق  
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**Incidence of Hydatid cysts disease among Sheep in Babylon Province / Iraq**  
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## Abstract

In the present study, a total of 157 internal organs of sheep were examined at Al-Hillah city from the period of April to the end September 2018 in order to detect hydatid infection. The total slaughtered sheep was divided into 56 males and 101 females, 2-5 years old. The finding showed that the total infection rate was 17.8% in females and 20.4%, 25.0% in males. The results also indicated that higher prevalence of infection in aged sheep compare to younger once. Distribution of cysts among organs varied from 65.6% in liver, 31.3% in lung, and 3.1% in spleen. Higher infection rate was noticed during July with a percentage of 26.1% whereas September recorded low infection rate with 12.9%.

**Keywords:** Hydatid systs, Epidemiology, Reticlo endothelial system, sheep. Parasites

## الخلاصة :

فحص 157 راس من الاغنام 56 ذكر و 101 انثى تراوحت اعمارها بي 2-5 سنة مذبوحة في مجزرة الحلة في محافظة بابل للمدة من نيسان ولغاية نهاية ايلول عام 2019 للكشف عن اصابتها بالاكياس العدرية وجد ان نسبة الاصابة 20.4% بلغت نسبة اصابة الذكور 25.0% والاناث 17.8% كانت الاغنام المتقدمة بالعمر اكثر عرضة للاصابة وبنسبة 22.3% في عمر 4-5 سنة مقارنة مع الاعمار الصغيرة انتشرت الاكياس العدرية بين مختلف الاعضاء وبنسب 65.6% في الكبد 31.3% في الرئة ، 3.1% في الطحال وبلغت اعلى نسبة اصابة 26.1% في تموز واطماً نسبة اصابة في ايلول 12.9% الكلمات المفتاحية : الاكياس المائية ابيديويولوجي.

## Introduction

Hydatid disease is caused by cestoda *Echinococcus granulosus* of 5.7 mm length with a scolex bearing four suckers and with body containing 2-6 proglottids (terminal segments), this worm lives in dog intestine [1]. The adult worm in dog intestine was discovered by Hartmann (1695) and distributed throughout temperate and subtropical regions of world [2]. The proglottids (terminal segments) release eggs that are passed in feces, after infection by an intermediate host such as sheep, goats, swim, cattle, horse, and man, the eggs hatch in the small bowel and release an oncosphere (hexacanth embryo). This, in turns, penetrates the intestinal wall and migrates thought the circulatory system into various organs, especially the liver and lung, in these organs the oncosphere develops into cysts that gradually enlarges [3]. Sheep are more sensitive to the disease; its distribution is normally associated with under developed countries, particularly in rural communities, where human maintains close contact with dog definitive host which may act as intermediate host [4]. Hydatidosis occurs in all breeds, sex, and ages of sheep but animals of 5 years of age and older have higher infection rates and greater of cysts/ animals [5] heavily infested sheep are undernourished, their wool is strangely and a characteristic cough is noted [6] with signs of weakness, anorexia, dyspnea, loss of weight, and finally death [5]. In human, the major cause of infedtion in mainly sheep strain [7]. In

addition, both sheep as well as dromedaries are considered intermediate host in endemic Mediterranean region. [8]. Hydatidosis is wide spread parasitosis and causes a great health problem in many countries. The rate of infection in Kuwait as example was 50% and 0.2 □ 38% in the other countries [3]. 56% in Bangladesh [10], 20% in Spain [11], 2.5% in England [12] and 2.5 □ 90% in Australia, Bulgaria, United State, Canada, middle east [13] and finally in Iraq 30% [4].

### Materials and Methods:

One-hundred-fifty-seven of animals were examined in central Al-Hilla abattoirs which represent the main slaughtering place for all provinces by visiting at weekly intervals during period from April to the end of September 2018. Post-mortem examinations of slaughtered animals were employed. Moreover, internal organs were checked for the presence of hydatid cysts. The data, the number of total and infected animals were recorded, as well as the age and sex of infected animals [15]. Regarding the metrological records in this area, humidity, rainfall and both maximum and minimum temperature were collected from the metrological records of Babylon province during study periods. Month prevalence was recorded for this purpose. The prevalence in relation to temperature, humidity, age, sex was also defined.

### The Results:

During the study period (April- end of September 2018) show that one hundred-fifty-seven slaughtered sheep were examined of which 20.4% were infected with hydatid cyst (Table 1).



Figure (1): Sheep liver infected with hydatid cyst at age 4-years.

Table (1): Prevalence of hydatid cysts in the sheep.

Age-year	No. examine	No. infected	%
2-3(3>)	64	12	18.75
3-4>	34	7	20.5
4-5	59	13	22.3
average	157	32	20.4

The hydatidosis occurrence was more frequently recorded in adult sheep 4-5 years (22.3%) in 3-4> years old (20.5%) than in younger sheep less than 3 years old (Table 1). Table 2 indicates that male's infection constitutes (25.0%) which is higher than females (17.8%).

Table (2): Prevalence of hydatid cysts according to the gender.

Gender	No. examine	No. infected	%
Male	56	14	25.0
female	101	18	17.8
average	157	32	20.4

was also noticed that distribution of cysts among visceral organ in examined sheep carcass varied from (65.6%) in liver (31.3%) in lungs, (21.276%) and (3.1%) in spleen (Table3).

Table (3): Prevalence of hydatid cysts among sheep according to the site of cysts.

Site of cyst	No. of infect.	(%)
Liver	21	65.6
Lung	10	31.3
Spleen	1	3.1
Other organs	0	0
Total	32	100%

It was observed that the highest prevalence between slaughtered sheep was mainly recorded during July (26.1 %) followed by August (25.9 %) and June (23.1%). The lowest prevalence (12.9%) was recorded during September (Table 4).

Table (4): Prevalence of hydatid cysts among sheep according to the months

Month	No. examine	No. infected	%
April	26	5	19.23
May	24	4	16.6
June	26	6	23.1
July	23	6	26.1
August	27	7	25.9
September	31	4	12.9
Average	157	32	20.4

### Discussion:

The occurrence of hydatidosis in an area is influenced by many factors therefore the higher prevalence of sheep hydatidosis in Babylon province compared with other authorizations as 6% in Baghdad [16] 5.5% in Mosul [17], 16% in Diwaniya [18] 13.87% in Samawa city [19] 14.05% finally in Babylon province in last study [20] may be due to the specific geographical position of Babylon province and un-controlled sheep trading across the borders with surrounding countries where the hydatid cysts is even more prevalent, in addition that sheep smuggling across the borders has increasing during and after the war which took place in 1991 leading to increase in prevalence rate and also in the rural areas people tend to slaughter sheep by themselves violating the rules of health authorities in addition to that in Iraq the life cycle is confined between stray dog sheep and man [1] then the disease in Iraq is still hyperendemic and is considered to be one of the most serious helminthes

disease in the country specially in marsh area in the south of Iraq. It was noticed that the sheep with more than three years were significantly more frequently affected than the once with less than three years old. The results were supported previously with other literatures [18] [5] and [21]. The high infection rate occurrence in the older sheep could be because of lowering of resistance because of environmental factors, increase the chance of infection which in turn resulted in declining body immunity. Both sex was affected in present study, but males more than females, these results may be because of number of slaughtered males at old ages was more than females and lowering of male's resistance due to highly movement and not stable and may be more than eating contaminated grass with egg of parasites.

*E. granulosus* infection depends on the number, size, developmental stage and location [22], In the present study the higher infection rate was located in liver (65.6%) then in lung (31.3%) our findings corroborate the opinion of many worker [19] [23] [16]. These results may be due to delicate nature of liver cells and enlargement of lumen portal vessels when the hexacanth embryos (oncospheres) pass through the wall of intestine and travel via the portal vein to liver in addition to that liver was regarded

as the nearest first capillary filter [6]. Some pass through the small capillaries to reach the lung and develop into hydatid cysts [5]. From the results of present study there appears to increase the infection-rate at July. the reason may be to that Spring (April and May) was favorable conditions to hexacanth development and infection, therefore the infection rate increase at July because hydatid-cyst needs three-months to develop to (10) cm largamente [5]. To sum up, there should be combination of efforts among all the countries nearby in order to implementing a control programs for hydatid cysts. In addition, stray dog should be eliminated. There should special slaughter house in the region and slaughter should be away from farms, street, and houses.

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