

The relationship of infection with Giardia parasite to the ages of infected sheep at holy Karbala city

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Abstract— The current study included examination of 120 fecal samples of sheep from the slaughter house at Kerbala province and private fields for 6 months (from Oct. 2022 to March 2023). The animals suffered from diarrhea. The current study showed the rate of total infection of Giardiasis was (80 of 120 samples). They were examined by smear method and using light microscope trophozoite and cyst phases of parasite. The result showed that the infection 52.5% I sheep from 42 infection the age less than 1 year, 47.5% from 38 infection more than 1 year Conclusion's animal and human together was source of infection with Giardiasis between them.

Keywords — sheep, Kerbala, Giardiasis, trophozoite, cyst

I. INTRODUCTION

GIARDIA lamblia (Syn: Giardia duodenalis, Giardia intestinalis) is the etiological agent of giardiasis, a gastro intestinal infection of humans, livestock, companion animals, and wild life, Giardiasis often disseminates when Giardia duodenalis cysts in feces contaminate food or water that is subsequently ingested. The disease can also propagate between humans and through other animals. Cysts may persist for nearly three months in cold water. Diagnosis of Giardiasis is conducted using stool testing (1). Symptoms of a Giardia infection vary from asymptomatic to severe diarrhea, as well as chronic illness. Giardia possesses a straightforward life cycle that includes quickly proliferating, non-invasive trophozoites on the intestinal mucosal surface, and the formation of environmentally resilient cysts that are excreted with the host's feces (2). The infectious cysts are expelled in significant quantities in the feces of the afflicted host, contaminating drinking water, food and swimming pools (3). Giardiasis has a global spread and is traditionally regarded as an epidemic zoonotic disease affecting both humans and animals (4). Ruminants infected with Giardia are predominantly asymptomatic; however, they may exhibit subclinical symptoms, including diminished growth rate and

impaired feed efficiency (5).

II. METROLOGY

Collection of fecal samples A total of 120 fecal samples were obtained from sheep experiencing diarrhea at house slaughter facilities in Karbala province and private farms during a period of six months (from October 2022 to March 2023). The samples were collected in sterile plastic containers, stored in larger containers with ice bags, and subsequently transported to the parasitology laboratory of Veterinary Medicine in Kerbala university to perform the examination.

2 sheep age determination: The age of sheep is determined chiefly by examination of the teeth, and less perfectly by the horn rings 3-2-3 Microscopic examination:

1. The direct smear technique (wet mount technique) Traditionally, the laboratory diagnosis of Giardia lamblia infections is conducted through microscopic analysis of stool samples, focusing on the identification of cysts or trophozoites in feces or trophozoites in the upper small intestine. It seems that minimal infections are overlooked when according to Wolfe's guidelines of analyzing three concentrated stool samples obtained on nonconsecutive days. The immediate examination of fecal samples following their expulsion (6).

2. The direct smear technique utilizing Lugol's Iodine: According to (5), the technique was executed as follows:

1. A droplet of lugol's iodine solution was deposited on a glass slide.

2. A small quantity of feces, approximately the size of a pinhead, was combined with Lugol's iodine drops and well stirred using a wooden stick.

3. The cover slide was manipulated using forceps.

4. Examination of the slide under 40x and 100x magnification. 3-2-4 Statistical Examination All data from this study were statistically examined using the Chi-square test (6).

III. RESULTS

Giardiasis according to microscopically examination:

The method was used to detect the Giardia trophozoite or cyst, the direct smear by using normal saline (10 %) and Iodine. This diagnostic feature was seen the cyst and trophozoite, the trophozoite as a tennis or badminton racket with longitudinally split pear, two and two sides.

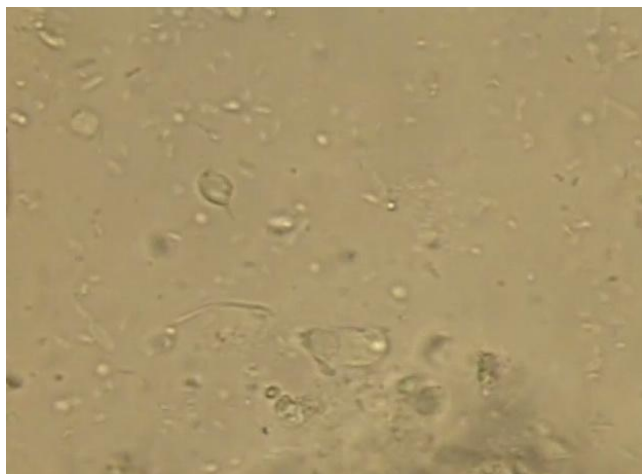


Figure 1: Giardia spp. trophozoite from sheep feces. (x40) using Normal saline 10 %



Figure 2: Cyst of Giardia spp. (100% immersion lens) using Iodine.

In sheep: Out of 120 fecal samples, 80 samples were positive to the infection according to the direct examination with normal saline (10%) and Iodine 80 (66.66%) and the negative to infection 40 (33.33%).

Animal's age: In sheep: Out of (80) samples positive: 42 (52.5%) less than 1 year and 38 (47.5%) more than 1 year. (Table: 1)

Age	Infected	Percentage
Less than 1 year	42	52.5%
More than 1 year	38	47.5%
Total	80	%100

IV. DISCUSSION

Giardia lamblia is a flagellated eukaryotic unicellular microorganism that produce diarrhea throughout the world (5). This intestinal protozoan of mammals and it's a zoonotic agent (5). The virus affects various animals, including beavers, other rodents, sheep and cattle. Animals are thought to contribute to the persistence of infections within an environment. Giardiasis typically transmits when cysts in feces contaminate water or food that is subsequently ingested orally. The sickness can transmit between humans and other animals. Cysts can persist for around 3 months in cold water and are detected through stool tests.

Giardiasis according to the ages:

The current study showed that the most infections of giardiasis was recorded in young animals, the highest rate (52.5%) was seen among animals aged (<1 year) and (47.5 %) in animals aged (more than 1 year).

prevalence 18.6% of Giardia in group of animals aged from (1 day – 1 year), also agreement with results that reported by in Baghdad and in Al-Diwanyah when they recorded the highest prevalence in group of animals aged less than six months (< 6 months) in sheep, in Nineveh, also reported the highest prevalence 22.5% of G. was recorded in group of animals aged (3-6 months).

In West Australia reported the high prevalence of giardiasis in aged from (4-7 weeks). Also showed that the high prevalence rate of giardiasis recorded in animals aged below 6 months (7) in the East Azerbaijan-Iran recorded high rate in lamb aged less two month and (24) which recorded high rate in group of animals under 12 months in Ahvaz in Iran. The discrepancies in giardiasis prevalence between the current study and those conducted in various regions and countries may be attributed to numerous factors, including environmental variations, sample size, seasonal timing of the study, diagnostic laboratory methods employed, and the examiner's expertise. All these elements influence the ultimate assessment of Giardia infection (8,9). Additionally, sewage effluent exhibited the highest prevalence of Giardia, despite the cyst concentration being lower than that found in sheep feces (10). Nonetheless, an interpretation of these findings about the origin of human Giardia infections can only be conducted alongside data on the distribution of Giardia species in these likely contamination sources (11). Nonetheless, there is limited evidence to implicate these animals as the principal cause of pollution in waterborne outbreaks. It has been suggested that these animals exhibit heightened vulnerability to infections from water tainted with fecal matter of human or domestic animal origin (12).

However, Giardiasis in ruminant is often asymptomatic. The C.S appear as this is influenced by many factors like species,

breed, age, immune competence, source of infection (food & water) contamination with fecal material & humidity.

Giardia infection is linked to economic losses due to diarrhea, stunted growth, and mortality in livestock. The variance in distribution regarding sample size, housing conditions, and management procedures.

V. CONCLUSIONS

1. The animal and human together was source of infection with Giardiasis between them
2. On the bases of the results, in the microscopical methods, Giardiasis was distributed in sheep in Kerbala province.
3. There are non-significant difference between animal species in Giardia prevalence but there are significant differences in age and months study by microscopical methods.

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