

Detection of giardiasis in apparently healthy cattle of Al-Qadissiya province by using direct ELISA technique.

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Abstract

The study was conducted to detect the giardiasis in apparently healthy cattle by using direct ELISA technique and the aim of this study was to detect the giardiasis in apparently healthy cattle as a risk factor to transport the infection cow of different regions in Al-Qadissiya province and preserved in formalin saline 10% until testing by direct ELISA. The samples was examined by ELISA Kit (Giardia2nd generation ELISA)/USA, showed rate 76.4% (65 out of 85) of samples were revealed positive result of infection, and highest rate was recorded in age group above one year (≥ 12 months) and males. The study revealed there is highly distribution of giardiasis among the apparently healthy cattle, so ELISA test consider an accurate and faster for investigation of a large number of stool samples in laboratories.

Key wards : *Giardia lamblia* , direct ELISA, cattle, fecal sample, parasite

الكشف عن داء الجيارديات في الابقار السليمة ظاهريا في محافظة القادسية باستخدام تقنية
الممتاز المناعي المرتبط بالانزيم (الاليزا) .

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الخلاصة

أجريت هذه الدراسة لتشخيص داء الجيارديات في الابقار السليمة ظاهريا باستخدام طريقة الممتاز المناعي المرتبط بالانزيم المباشرة . تم جمع 85 عينة براز من الابقار السليمة ظاهريا من مناطق مختلفة في محافظة القادسية، وحفظت بالفورمالين سلاين 10% لحين الفحص . فحصت العينات باستخدام تقنية الاليزا المباشرة، فكانت نسبة الاصابة 76.47% (65 من 85) من النماذج المفحوصة اعطت نتيجة ايجابية للأصابة وكانت النسبة الاعلى للأصابة في الفئة العمرية الاكثر من سنة (≤ 1 سنة) والذكور 85.71% ، 80.95% على التوالي، وأظهرت الدراسة الى ان هناك انتشار واسع لداء الجيارديات في الابقار السليمة ظاهريا واكدت الدراسة ان اختبار الممتاز المناعي المرتبط بالانزيم ادق و اسرع لفحص عدد كبير من العينات في المختبر .

الكلمات المفتاحية: جيارديا لامبليا، الاليزا المباشرة، الابقار، عينات البراز، طفيلي

Introduction

Giardiasis is one of important worldwide distribution and it is traditionally considered an epidemic and zoonotic disease between human and animals (farms animals, dogs, cats, birds and rodents) affects all age groups (1). The parasite *Giardia lamblia* is an flagellated binucleated protozoa from the Mastigophora class habitat in duodenum down to the upper part of the ileum in man and wide variety of vertebrates. It is a main cause of traveler's diarrhea infection where manifested with symptoms include abdominal cramps nausea flatulence and acute or chronic diarrhea (2), and it has two life phases trophozoite and cyst. *Giardia* infection can occur through ingestion of dormant cysts in contaminated water, food, or by the faecal-oral route (through poor hygiene practices). The *Giardia* cyst can survive for weeks to months in warm water (3). The trophozoite attaches to the epithelium by a ventral adhesive disc, and reproduces via binary fission(4,5). The aim of the study is to detect the giardiasis in apparently healthy cattle as a risk factor to transport the infection between animals and humans

Materials and Methods

85 fecal samples were collected from cattle in Al-Qdissiya province (21 males and 64 females of different age groups where they had no signs of giardiasis during the period of April 2013 to may 2013. These samples were preserved in 10 ml of formal saline 10% until used. *Giardia* 2nd generation Kit (Diagnostic Automation, INC, Cat.No.8304-3)/USA was used to detect the infection according to the manufacturer's instructions. Briefly, 50 µl of fecal sample was added to each well with dilution buffer and incubated for 60 minutes at room temperature (15-25c°), washed, 2 drops of enzyme conjugate were added to each well, incubated 30 minutes, 2 drops of chromogen were added to each well, incubate 10 minutes, then 2 drops of stop solution were added to each well. The result was read at 450/620 ~ 650nm by ELISA reader.

Statistical analysis Chi-Square (X^2) was used for detect statistical difference of data prevalence of disease and effect of other factors(6).

Results

The results were shown that the rate of infection among apparently healthy cattle were 76.47% (65 out of 85). Regarding to the age, the current study was referred to that most infections of giardiasis were seen among animals with age group (≥ 12 months) where it recorded 85.71%, also the age groups (<6 months) (6 months-12 months) recorded high prevalence rate 64%, 63.63% respectively with a significant differences ($P < 0.05$) (Table 1). In other hand there was non-significant difference ($P > 0.05$) between males and females in the current study, where high prevalence rate (80.95%) was recorded in males, while in females the prevalence rate was 75%. (Table 2).

Table(1) : Prevalence of giardiasis according to age groups using direct ELISA test.

Age	No.of examined sample	No.of positive	Percentage (%)
< 6 m.	25	16	64 a
6 m.-12m.	11	7	63.63 a
≥ 12 m.	49	42	85.71 b
Total	85	65	76.47

- Similar letters refers to the non-significant differences while different letters refers to significant differences at ($p < 0.05$).
- M=month, y=year.

Table(2) : Prevalence of giardiasis according to the sex using direct ELISA test.

sex	No.of examined sample	No.of positive	Percentage (%)
male	21	17	80.95 a
female	64	48	75 a
Total	85	65	76.47

- Similar letters refers to the non-significant differences ($P > 0.05$) while different letters refers to significant differences at ($p < 0.05$).

Discussion

The prevalence rate of giardiasis in cattle according to direct ELISA technique is (76.47%), which appeared highest than other previous studies (7),(8) and (9) when they referred to that the rate of giardiasis infection by using ELISA test were 10.8%, 9.3% and 13.3% respectively. The increasing of the infection rate in the current study may be attributed to availability of suitable environmental condition to the parasite, reduction of animal healthy care in addition to the direct contact of the animal because more of them are rearing in close or semi closed cowsheds (10). Regarding to the ages, the current study is referred to that most infections of giardiasis were seen among animals with age group (≥ 12 months) where it recorded infection rate 85.71%, also the age groups (<6 months),(6 months-12 months) recorded high prevalence rate 64%, 63.63% respectively with a significant differences ($p < 0.05$). This results is consistent with results that recorded by (11) who reported to that infection was high prevalence rate in age group (4-5 weeks) of old calves and remained high among older calves up to 10 weeks. The results in the current study disagree with (12) in Alava (northern Spain) who recorded that infection rate of giardiasis in calves higher than adults, also disagree with (13) who reported 45.4% of giardiasis rate that were in calves aged between 2-16 weeks, but (9) in Bangladesh reported low rate (13.3%) in calves. This may be due to the adult mothers of cows have chronic infection due to decrease in level of acquired immunity, also the calves more susceptibility to infection when they exposure to the *Giardia* cysts which excreted from chronic infected mothers, (14) noted that the excretion of *Giardia* cysts in cow in the last period of pregnancy be in small quantities and then increase to 38.25cyst/gm of feces at birth, and then increase in first week after birthing, that's lead to increase infection in young calves.

On the other hand, there are non-significant difference ($p > 0.05$) between male and female is recorded in the current study, but males recorded highest rate (80.95%) than females which recorded (75%). This result line with (9) in Bangladesh, who reported male calves (14.3%) have slightly higher prevalence than female calves (12.5%).

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