

DIAGNOSTIC STUDY OF CRYPTOSPORIDIOSIS IN GOAT IN AL-QADISIYA PROVINCE

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Key word : cryptosporidiosis , goat , intestine protozoa

ABSTRACT

The present study was conducted during the period from September 2015 until April 2016. 100 fecal samples were collected from goats to diagnosis of *cryptosporidium* parasite from different regions in AL-Qadisiya province and the study designed to evaluate the microscopic features of the parasite. The results of microscopic examination showed that the oocyst of parasite appeared oval-shaped or spherical objects with a color dark pink, or red on a blue ground, 21 (21%) goats out of 100 cases were positive with significant differences at level ($P < 0.05$). The results showed that the highest rate of infection (31.5%) were observed in the ages (6-12) year respectively, while the lowest rate of infection (11.1%) that was observed in the ages (1-3) year. There are effects of the sex in the infection in goats. The highest rates of infection (33.3 %) were seen in December and lowest rate (8.3%) were observed in September, while the other months, showed different results, with significant differences at ($P < 0.05$). From the results, it was observed that the rate of infection in different study areas were relatively close, and ranged between (18.7-23.3%), so there has been non-significant differences at level ($P > 0.05$) and using of ocular micrometer for determination of length and width of oocysts that showed the measurement from (4.5-5) μm .

INTRODUCTION

Cryptosporidiosis represents the public health concern of water utilities in developed country (1). Transmission of *Cryptosporidiosis* is through ingestion of oocysts from the infected individuals by contaminated food, water and pasture (1;2). Currently there are approximately 25 valid species and more than 50 genotypes of *cryptosporidium* (3,4). The species identified *C. parvum*, *C. xiaoi* and *C. hominis* may infect goats (5). The parasite is considered one of the basically enteric pathogens

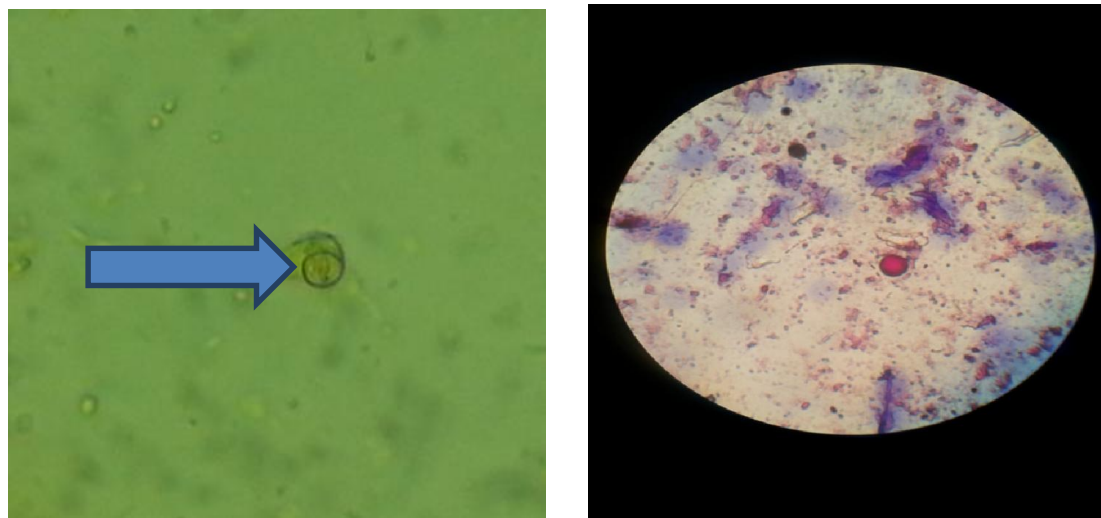
comparison with neonatal diarrhea and mortality in lambs and goat kids (6,7) .(8) in Baghdad province and(9)that a few studies have genotyped *Cryptosporidium* spp from goats in the world. Previous studies indicated that *Cryptosporidium parvum* was the dominant *Cryptosporidium* species, as well as *Cryptosporidium xiaio*, *Cryptosporidium hominis*, a goat genotype, and a new *Cryptosporidium* genotype have also been detected in goats (3,10and 11). and recently *C. xiaio* from two diarrheic kids less than 21 days old (12). In eight adult goats in Peru, (13)showed the presence of another species: *Cryptosporidium ubiquitum* .

MATERIAL AND METHOD

One hundred Fecal samples were collected randomly from goat in different age range from 1 month to 5 years old ,from both sexes during the period beginning from September 2015 to end of April 2016 the study involved different regions in province of AL-Qadisiya. microscopic examination the oocyst detected by examination each sample by pigmented the swab by Modified Ziel -Neelsen (MZN)(14) And flotation by using sheather's solution (15), using of ocular micrometer for determination of length and width of oocysts . The results of the present study were analyzed by SPSS program (version) software 2010, using Chi-square test(X^2) and P values of $p < 0.05$.

RESULT

Diagnostic characterization of *cryptosporidium* spp of microscopically examination *Cryptosporidium* parasites were seen in goat when examined under high oil emersion (100) lens of microscopic as in figures show oval-shaped or spherical objects with a color dark pink, or red on a blue ground and using flotation method figure (1)



Figure(1) :-show *cryptosporidium* in goat stained with M Z N magnification (100x) and flotation method. the range of its size (4.5-5µm) Measured by ocular.

The highest rates of infection (33.3 %) were seen in December and lowest rate (8.3%) were observed in September, while the other months, showed different results, with significant differences at ($P < 0.05$) as in table(1)

Table (1) microscopic examination of goats according to the month of study

| Month | Examined No | Positive No | Percentage % |
|-----------|-------------|-------------|--------------|
| September | 12 | 1 | 8.3 % A |
| October | 16 | 3 | 18.7 B |
| November | 24 | 5 | 20.8 % AB |
| December | 18 | 6 | 33.3 % C |
| January | 5 | 1 | 20 % BC |
| February | 25 | 5 | 20 % BC |
| Total | 100 | 21 | 21 % |

The similar letters refers to the non – significant differences whereas The different letters denote to the significant differences of ($P < 0.05$).

From the results, it was observed that the rate of infection in different study area were relatively close, and ranged between (18.7-23.3%), so there has been non-significant differences at level ($P > 0.05$) among those percentages as in table(2)

Table (2) microscopic examination of goat cryptosporidiosis according to area of the study

| Region | Examination No | Positive No | Percentage% |
|-------------|----------------|-------------|-------------|
| City Center | 30 | 7 | 23.3 % A |
| Al-Nora | 16 | 3 | 18.7 % A |
| Al-Daghara | 24 | 5 | 20.8 % A |
| Al-Sania | 5 | 1 | 20 % A |
| Al-bidder | 25 | 5 | 20 % A |
| Total | 100 | 21 | 21 % |

The similar letters refers to the non – significant difference at ($P < 0.05$).

The results showed that the highest rate of infection (31.5%) were observed in the ages (6-12) year respectively, while the lowest rate of infection (11.1%) that was observed in the ages (1-3) year and the groups show significant differences at level ($P < 0.05$) as in table(3)

Table (3) microscopic examination of goats according to the age

| Age | Examined No | Positive No | Percentage % |
|------------|-------------|-------------|--------------|
| 1-6 month | 40 | 8 | 20 % AB |
| 6-12 month | 19 | 6 | 31.5 % A |
| 1-3 years | 18 | 2 | 11.1 % B |
| 3-5 years | 23 | 5 | 21.7 % AB |
| Total | 100 | 21 | 21 % |

The similar letters refers to the non – significant differences whereas The different letters denote to the significant differences of ($P < 0.05$).

Goat showed significant differences between male and female at ($P < 0.05$). as in table (4)

Table (4) microscopic examination of goats Cryptosporidiosis according to sex

| Type | Total | Male | Positive No | Percentage % | Female | Positive No | Percentage % |
|------|-------|------|-------------|--------------|--------|-------------|--------------|
| Goat | 100 | 23 | 7 | 30.4% A | 77 | 14 | 18.1% B |

in goat The different letters denote to the significant ($P > 0.05$)

DISCUSSION

The present study was performed to diagnosis *Cryptosporidiosis* disease in goats in AL-Qadisiya province due to the economic losses produced from this disease and the studies about this animals specially goat detection by microscopic examination for fecal samples by making slid from it sample than staining by ZN stain(14).

The results in the present study the total infection of *Cryptosporidium* is 21% in goat .That will agree with our study and compare the result with other study in the same area, it is closely to(16) .Which was in goat 17.4% we noted that in(17)in Baghdad 5.85%,(18) 10.77 %in goat also in Baghdad .

In the world , in Brazil which recorded 30% by (19,20) in Turkey also recorded 30% by (21) in goat but our study higher from(22) in Iran the rate was 3.8% , 12% in Turkey recorded by(23) and in Nageria by(24) which is 22.7%in goat . In Bangladesh

, in Iran 11.3% (25) but high infection *Cryptosporidium spp* oocysts were observed in 30.51% (18/59) of goat kids. In goat (42.9%) in Korea (26) .

The reason for these results is that depend on many factors like size of sample ,breeding condition , the method of diagnosis may have great effect on the detection of the rate of infection , in Iraq small ruminants breeding in open farmyard with low number but in world it breeds in the flock in large number in small area lead to infect , the water which is a great source of transmission (27) the effect of environment factor is limited because of the oocyst will be sporulated without any special circumstance and have resistant to high temperature and humidity ,on the other hand the viability of oocyst reduce with high temperature up to 15c (28) in Iraq the infection will be lower because it is from semi tropical area compared with world low-temperature areas.

According to the months of study , the result are relatively different between the month in goat the highest range in December which was 33.3% and the lowest range was 8.3% in September . In the present study in an agreement with the (29) in Dylla. He recorded that high infection rate in November , The reason of that make the climatic conditions which keep the oocyst in environment still survive ,and prepare the condition with the season of birth and milking in this month .The mosquito plays an important role by transmission of *Cryptosporidium* also in this month will breed different number of animal , additionally the months that included in current study were not include all the month of year all that important for different the rate of infection in the month

Our study pointed that the goat there is no significant difference between the area of our study that was agree with (30) which reported to that ,there is no significant difference between the area of study that was be different with the (31) (32) they refer to that there is a significant difference between the area of study .

The random way of breeding to defriend animal in the same area in large number lead to contamination the water ,milk ,feed ,with oocyst and accumulation of feces in the same area which is best media for keeping oocyst a life .

According to the age in goat the highest rate of infection in age 6-12 month and the lowest 11.1% in age 1-3 years that attributed to immunity depuration in the season

of birth (33,34 , 35) which refer the mothers which infected in the younger age but it stop shedding oocyst in the weaning which return to shedding oocyst in birth season with Immunosuppression .

According to sex , our study was showed in goat there was a significant deferent between male and female that agree with (36) and (37) in Baghdad in goat, which pointed to that the parasite have no sex specify , both sex have the ability to infect and because of it breeding mix together and not separate the infected animal from the flock.

دراسة التشخيص الجزيئي للابواغ الخبيثة في الماعز في محافظة القادسية

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الخلاصة

أجريت الدراسة خلال الفترة الممتدة من شهر أيلول 2015 ولغاية شهر نيسان 2016 تم جمع 100 عينة براز من الماعز من مختلف أفضية ونواحي محافظة القادسية صممت هذه الدراسة لمعرفة الصفات المجهرية لأكياس البيض الطفيلي حيث ظهرت أجسام بيضاوية الشكل وكروية مع اللون الورد الداكن، أو الأحمر على أرضية زرقاء وكانت النتيجة 21 (21%) من الماعز 100 حالة إيجابية ولوحظ أن معدل الإصابة في الماعز في عمر (6-12) شهراً مع وجود اختلاف كبير في مستوى المعنوية ($P < 0.05$) وكان هناك تأثير للجنس في إصابة الماعز. ولوحظ أن أعلى نسبة إصابته في شهر كانون الأول حيث بلغت (33.3%) بينما كانت أقل نسبة إصابته في شهر أيلول حيث بلغت نسبة الإصابة (8.3%) . وكانت الإصابة حسب مناطق الدراسة لوحظ تقارب في النتائج، وقد تم استخدام القياس المجهرية لأكياس البيض حيث بلغ معدل ما بين (4.5-5 μ m) وقد تم التحليل الإحصائي بواسطة برنامج SPSS.

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