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Investigation of Cryptosporidium infection in Lambs and Goat Kids at Al-kut city,wasit province.

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Abstract:
A total of 150 fecal samples was collected from 100 lamps and 50 goat kids from different regions in al kut city, were collected from September 2016 to July 2017and examined for *Cryptosporidium* infection with Sheather's flotation technique and Modified Ziehl-Neelsen Staining. Accordingly, the overall prevalence was found to be 35%. The prevalence of 46% (46/100) in lambs ,14% (7/50) goat kids were recorded. There was a significant difference ($P < 0.05$) in the prevalence of cryptosporidiosis between diarrheic and non-diarrheic animals. There was statistically significant variation ($P < 0.05$) observed in the prevalence of *Cryptosporidium* infection between animal species. In conclusion, this study demonstrated the importance of *Cryptosporidium* in young ruminants with a higher prevalence among diarrheic animals than non diarrheic.
Key words: Cryptosporidiosis, goat Kids, Lambs ,Prevalenc

INTRODUCTION:

The protozoan parasite genus *Cryptosporidium* has been identified as the cause of numerous outbreaks of diarrheal disease in humans and animals worldwide (1). At present, 14 species of *Cryptosporidium* are regarded as valid on the basis of differences in oocyst morphology, site of infection, vertebrate class specificity, and genetic differences (2,3,4).
Cryptosporidium is considered as the major cause of diarrhea in children, Cryptosporidium is a genus of protozoan parasites that infect a wide range of vertebrates including humans and animals; and results in significant morbidity and mortality in both the developing and developed world (1). Cryptosporidiosis is transmitted by faecal–oral route, or by ingestion of food and water contaminated with Cryptosporidium oocysts (5).
The protozoan diseases, Cryptosporidiosis, is important enteric diseases of sheep and goats, resulting in diarrhea, inefficient weight gains and occasionally death (6). Cryptosporidiosis is a widespread , serious economic disease affecting animals who are pre weaned, recently weaned, in unsanitary , stressful, or crowded conditions , as well as after entering feedlots (7).
Cryptosporidiosis is an emerging , zoonotic disease which produce intestinal and extra-intestinal disorders in both humans and animals. The disease is well known in veterinary medicine and only recently has it been recognized as a leading protozoal cause of diarrhea in humans (8).
Faeco-oral transmission between domestic animals and humans may be an important mode of infection and it is likely that both serve as reservoirs of the disease (9).
People at risk are animal handlers and also children attending ,day care centers, patients on immunosuppressive therapy and patients with chronic diseases (10).
Cryptosporidium causes severe , watery diarrhea , anorexia and weight loss in economically important animals especially neonates (10). The animal either resist the infection or die after becoming infected (11). Human species , C. parvum has been identified as the most common infectious agent in outbreaks of diarrhea in USA among cattle, sheep, goats and pigs (12).

Reports also show that the infection rate with Cryptosporidium species among pediatrics in rural and semi urban areas is higher than in urban areas (13, 14,15). Others reported no significant difference between urban and rural prevalence rates (16). Cryptosporidium-associated diarrhea occurs mainly in younger children and inversely correlates with age, being more prevalent in children aged 1 year or less particularly in rural and suburban regions (17, 18, 14, 19).
Although most Arab countries are characterized by a hot summer and a mild winter , infection with Cryptosporidium appears to occur at a higher rate of incidence during the rainy months that are usually associated with the cold season of the year (14,20).

This work aimed to throw light on prevalence rate of Cryptosporidium among sheep and goat in kut city in wasit Province. Iraq and assessment of their epidemiological and clinical aspects.

Materials and methods

Animals:

An aggregate of 100 fecal specimens from Lambs and 50 from Goat Kids were gathered from sheep and goats (under 12 months of age).150 Fecal examples were gathered from Lambs and goats from September 2016 to July 2017, Fresh fecal specimens were gathered per rectum and put in fact plastic holders. Examples were put away in a fridge at 4 C˚ . The consistency of the specimens was scored as diarrheic or non diarrheic. In creatures with looseness of the bowels, the date of inspecting, source, and age, were recorded for every creature.

Parasitological examination :

Cryptosporidium disease was analyzed through fecal examination. New fecal examples were gathered straightforwardly from the rectum, and set apart for ID. After gathering, the examples were set in a refrigerator to moderate the material until handling in the lab. Fecal examples were concentrated utilizing sheather's flotation technique in immersed sucrose solution (21). The surface film from the top was exchanged with expendable culture circle on to a magnifying lens slide and secured with glass slip. The whole secured region was analyzed under high power (amplification X 40). The changed Ziehl – Neelsen system was utilized for affirmation as it is specific re-coloring method. New defecation and isotonic saline were blended and spread out on the magnifying lens slide to get a homogenous and straightforward film. Slides were air dried, settled in supreme methanol for 3 minutes, recolored in icy carbol fuchsin for 10 minutes and decolorized in 3 % hydrochloric corrosive for 1 minute. At that point 1 % methylene blue was connected for 30 seconds. Washed in faucet water and air dried. In the wake of recoloring the fecal smears were seen under an optical magnifying instrument , at first at(magnification X40) and after that at (amplification X100) for recognizable proof of oocysts of Cryptosporidium sp (22).

Data Management and Analysis: The information were entered to exceed expectations spread sheet program to make an information base which was exchanged to SPSS 20.0 Version programming program. Noteworthy level was resolved at 95% certainty level of (P< 0.05).

RESULTS:

Among 150 creatures analyzed utilizing Ziehl-Neelsen recoloring method, the general predominance of Cryptosporidium in all species was observed to be 35%. The pervasiveness in Lambs was 46% (46/100) while the extent in goat children was 14% (7/50) (Table 1).

An examination of the consistency of the fecal specimens demonstrated that 71% (107/150) of tests were diarrheic. Of these, 45% (48/107) tried positive for Cryptosporidium oocysts. The staying 29% (43/150) were non diarrheic, with 12% (5/43) of these testing positive (Table 2). There was statically huge contrast (P < 0.05) between the quantities of diarrheic examples with Cryptosporidium oocysts contrasted with the non diarrheic specimens.

Table 1: The prevalence of Cryptosporidiosis by animal species

Animal species	Number examined	Number positive	%	Number negative	%
Lambs	100	46	%46	54	%54
Goat Kids	50	7	%14	43	%86
Total	150	53	%35	97	%65

Table 2: Prevalence of Cryptosporidiosis by fecal consistency

Fecal consistency	Number examined	Number positive	%	Number negative	%
Diarrheic	107	48	%45	59	%55
Non-diarrheic	43	5	%12	38	%88

Discussion:

Out of 150 fecal specimens gathered amid this review, the general pervasiveness of Cryptosporidium in all species was observed to be 35%. This outcome was almost in concurrence with other analyst [23]. He detailed a general 20% pervasiveness of Cryptosporidiosis in cows, sheep, goats and wild oxen in Egypt. In Iraq, comparable finding was accounted for by different reviews, for example, [33]. In Turkey, the pervasiveness rate of 21.05 % in neonatal sheep was accounted for by other scientist [23].

There was statically critical contrast ($P<0.05$) between diarrheic (45%) and non diarrheic creatures (12%). This was in concurrence with the aftereffects of past reviews demonstrating that sheep tainted by entero pathogens can be subclinically contaminated (23).

This opservation . contrasts the discoveries announced by different laborers who found that the disease was recognized in an extensive variety of age gatherings stretching out from two week old to grown-up creatures of over one year (24) .The distinctions in the recurrence of Cryptosporidium and Giardia predominance in sheep and goats brought up in various geological districts can be the aftereffect of contrasts in tainting of the earth with oocysts and cysts of the parasites or diverse infectivity of Cryptosporidium sp. Populations (25). It is additionally conceivable that the nature of zoo hygienic states of creature farming and touching practices may impact the introduction of creatures to Cryptosporidium infection (25).

Our review uncovered that both the shedding and power of shedding of oocysts and was higher in diarrheic than in non diarrheic gatherings of creatures, the most minimal pervasiveness of the contamination was observed in grown-up animals(Table 2). These perceptions are in adjustment to (26, 27, 28, 29 and30).

The general predominance of Cryptosporidium disease decays with expanding age. This is as per all past work which uncovered a comparable pattern in disease versus age (23). This pattern might be expected two reasons: The first is the insufficiency of immune system of the sheep and goat kids , and the second reason is the presentation of the sheep and goat kids to high number of oocysts that shed from other infected sheep (31,32).

Conclusion:

The aftereffects of the present review show that Cryptosporidium contamination are included in the etiology of sheep and children neonatal loose bowels and must be considered as an issue. A few variables might be identified with the overcrowding and the sterile states of the lambs and kids areas. In perspective of the general wellbeing criticalness of cryptosporidiosis, further reviews are required.

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