

Prevalence of Cryptosporidium Infection in Calves with Effect on Biochemical Parameters

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Abstract

This study was conducted throughout the year on 93 calves from different regions of Baghdad province. Three age groups included; Below 1 month, 1-2 months and above 6 months. A changed aim-the technique of stain Neelsen (MZN) has been used for the identification of the development of cryptosporidium and fecal diarrheic samples.

In biochemical research, blood samples have been obtained. Cryptosporidium occurrence was much higher in spring season (56%), followed by the winter (52%), the allergy season (46%), and lowermost in a season of summer (40%). The highest rate of infection in animals which was given was the age group of the animals that under the age of 30 days (71%), 2-6 months were (59%) and (43%) were over 6 months old. The animals concerned reported substantial rises in plasma, urea and creatinine relative to stable animals in the management of biochemical changes. Finally, Age and seasonal changes were associated with cryptosporidiosis. The biochemical factors affected by the calves also have a negative effect.

Key words: Calves, Cryptosporidium, Age, Season.

Introduction

Cryptosporidium is one of the most military personnel responsible for many outbreaks over the worlds. They often participated in military exercises in pathogens, especially in calves until the age of one month⁽¹⁾. There was a link between the era of animals and animals⁽²⁾.

Most cryptosporidium, *C. parvum* is the main parasite and later calves found in the genus Epicomplexan and *C. bovis*. The causes of the rash are determined. *C. Androsi* was the largest number of host species, including birds and mammals, is found most frequently in livestock over one year of age⁽³⁾. Fish and fecal reptiles⁽⁴⁾. The

infection was spread mainly by calf samples, as 19.2% of the germs passed through calves infected with Cryptosporidium⁽⁵⁾.

Economic losses due to infection were in 2 weeks of age when 29 were not the only result of illness due to death, 30 calves stimulated the eye. On a dairy farm, but due to the slow growth of livestock, in Maryland, the United States cost medications that were widespread before birth and veterinary aid and labor growth was higher in calves (1-8 weeks old) (45.8%) was. Later included⁽⁶⁾. Cryptosporidia is a clinical disease, in which calves (3 to 12 months) (18.5%) and wheels (12 to 24 are usually the most common symptoms of gastroenteritis) (2.2%)⁽⁷⁾. The signs of cryptosporidiosis starting with the mild and severe symptoms of a large proportion of diarrheal disease among American hosts⁽⁸⁾. Many studies done in Iraq to investigate the prevalence of Cryptosporidium infection in man animals^(9; 10).

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This study was designed to investigate the prevalence of cryptosporidiosis in calves at different ages and seasons of Baghdad province.

Materials and Methods

Animals:

During a year, 93 calves were obtained from various area in Baghdad province. There are three age groups: less than a month, 1-2 months and above 6 months.

Sample Collection:

In a clean container with the labels stool samples have been taken out of the animal's rectum. Samples were formed and skewed. Blood samples from all animal tested in a sterile tube, and made centrifuge in 3,000 rpm, were collected for biochemical analysis and separated into smaller, dated and keep tubes at -20°C . Biochemical tests investigated in this study include creatinine and urea which tested by using commercial kits of Biolabo company.

Detection of Oocysts:

Soft smear stains with a Modified Zeihl - Nielsen Stein (MZN) adjustment. Eggs were measured with the help of a stage micrometer connected to an optical microscope at 10x and 100 x on the target. All measurements for about 20-50 eggs per micrometer (nanometers) ⁽¹¹⁾.

Statistical Analysis:

This is done by using a Software (SPSS).

Results

Oocysts:

Individuals who discovered Cryptosporidium in the fecal calf with the Ziehl-Nielsen technique were of the same size as Cryptosporidium perfume tissue in an oval shape on a smooth acid-fast wall (pinkish red). 50 eggs measure with an average of 4.4 to 5.8 x 4.3-4.9m (5.1 x 4.6) and index 1.0-1.2 with average (1.1) (Fig. 1).

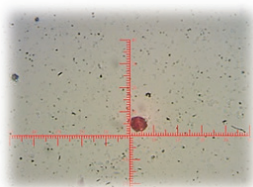


Figure 1. Cryptosporidium

Cryptosporidium Infection prevalence in calves at different seasons, age ranges and fecal quality:

As for the seasonal frequency, the occurrence was much higher in spring season (56%), followed by the winter (52%), the Autumn season (46%), and lowermost in a season of summer (40%). The highest rate of infection in animals which was given was the age group of the animals that under the age of 30 days (71%), 2-6 months were (59%) and (43%) were over 6 months old.

Some Biochemical indices alteration in relation with Cryptosporidiosis:

The biochemical study of infected calves has shown that blood urea and creatinine rates have risen significantly increase than non-infected calves. In the other hand, there was a significant rise in blood urea rates with an increase of blood creatinine.

Discussion

It was observed that in this study, a higher prevalence of cryptosporidium was found in calves under a month, followed by 30-60 days, whereas animals over six months old had the lowest incidence of Cryptosporidium. These findings were in agreement with other study showed that the infection rate among individuals is high (11,7 to 15,6 %) younger than one month and then reached 0% in individuals older than 4 months ^(12,13). Many researches have shown that pre-calf calves are only significant sources of animal origin ⁽¹⁴⁾, which are of animal origin in calves less than two months old.

There may be several factors explaining the difference in the prevalence of these studies from the current study, such as severity of infection, health measures, foot multiplication, and screening season. Any of these factors may increase the risk of cryptosporidium transmission or spread among calves individually or collectively ⁽¹⁵⁾.

It has been found that cryptosporidiosis is more prevalent on oblique calves than on non-skewed animals, as these findings were accepted during the spring and in the summer at the lowest levels, It was in agreement with these findings ⁽¹⁶⁾ and other investigator ⁽¹⁷⁾ found that the most widespread of cryptosporidiosis was in spring season then winter, autumn, and summer. The disparity between regions and weather (humidity and temperature) can be attributed to these variations. If the precipitation or amount of births in several seasons has

risen, seasonal effects can only be calculated accurately if many successive years of studies are repeated.

The study showed a large rise in serum urea and creatinine relative to healthy animals in infected animals. The results were consistent with L-Desocki and L-Massey⁽¹⁸⁾, who reported that serum urea and creatinine levels increased significantly in infected calves. Also,⁽¹⁹⁾ found a marked increase in serum urea levels with a slight increase in creatinine after infection with cryptosporidiosis. A large rise in blood urea levels in calves and renal insufficiency may be attributed to the fluid loss in order to retain fluid in the body⁽²⁰⁾. However, the high rates of all metabolic waste may be attributed to a significant raise in serum creatinine levels in diseased calves, including creatinine as a result of the reduction in the urine for fluids in the body⁽²¹⁾.

Conclusion

Cryptosporidium is a parasite that causes calves diarrhea, which slowly decreases with age, and adults are unable to disrupt the parasite. Moreover, disease management is strongly influenced by the system and associated with seasonal changes and negatively affects the biochemical factors of the affected calves.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

Conflict of Interest: The authors declare that they have no conflict of interest.

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