Journal of Infectious Diseases & Research
JIDR, 3(2): 109-110
www.scitcentral.com
ISSN: 2688-6537
Mini Review: Open Access

A Review of Cryptosporidium Infection in Neonatal Lambs and Camel Calves

Osman Abdel Hameed*

*Department of Virology, Central Veterinary Laboratory, Sudan.

Received March 26th,2020; Revised April 06th, 2020; Accepted April 08th, 2020

ABSTRACT

Cryptosporidium infection is a major problem in neonatal ruminants. Cryptosporidium is a zoonotic small protozoan parasite (4-6 µm) that inhabit microvillus border of epithelium mucosal in many vertebrates including livestock. Cryptosporidium spp. is known as one of the most common water and food borne diseases. It is common cause diarrhoea in human and animals. This review highlights the occurrence of Cryptosporidium infection livestock particularly in cattle, goats, sheep and camel are explained in this review paper including the incidence of infection, diagnosis and the control and economic losses are also discussed in this paper. Cryptosporidium infection is a major problem in livestock as the infection causes neonatal diarrhoea syndrome. Cryptosporidium infections in small ruminants may be a source for cryptosporidiosis in human. Since there is a lack of effective drug available to treat cryptosporidiosis, application of proper effective management is a must to prevent the spread of cryptosporidiosis among the livestock.

The spreading of Cryptosporidium infection in humans had given more attention to the worldwide because this infection can lead to life-threatening disease in humans. The spreading of infection in bovine needs more investigation.

Keywords: Cryptosporidium, Protozoan, Diarrheic, Neonatal, Resolution, Parofor, Paromomycinsulphate, Immunochromatographic, BoviD4, Rota virus, Corona virus, E. coli, K99, BoviD-4, MZN-aminoglycosides

REVIEW

Cryptosporidium parvum, a protozoan parasite, is considered as an important agent in the etiology of the neonatal diarrhoea syndrome of calves, lambs and goat kids, causing considerable direct and indirect economic Losses. Moreover, the zoonotic potential of cryptosporidiosis makes it a public health concern.

Of the seven Cryptosporidium species identified in sheep, two are predominant: *C. parvum* and *C. ubiquitum*. Cryptosporidiosis occurs in lambs and kids at an early age of life (5-10 days of age).

The most prominent clinical signs of ovine cryptosporidiosis are diarrhoea lasting 2 to 12 days and this is sometimes accompanied by anorexia, stiffness, hyperpnoea, slow gait and depression [1-10].

Cryptosporidiosis causes high morbidity and it has been recorded in various domestic young animals such as lambs, kids, foals and calves, leading sometimes to mortality. Found the infection rate in lambs Was 72.73% and the diarrhoeic lambs were 6-37 days old have reported the infection of calf camel less than 3 months in Riyadh, Saudi Arabia with a prevalence rate of 15.1% Huge economic losses due to Cryptosporidium infection were recorded by different researchers [11-15].

There are different methods used for the detection of Cryptosporidium in faecal samples. Generally, microscopic examination is used for detection of Cryptosporidium oocyst in faecal samples. The most procedure has been widely used, the Modified Ziehl-Nielsen (MZN) acid fast stain. Different antigen detection method such as ELISA, immune fluorescence and genome detection method such as PCR are used for detection of the Cryptosporidium [16-20].

In the recent years immune on chromatic dipstick test (ICT) have been used for rapid diagnosis of Cryptosporidium. According to the manufacture, these tests are rapid and sensitive enough, but provide only qualitative results for the presence of pathogen in faecal samples. To control cryptosporidiosis is a big global challenge for veterinary as well as for human medicine. Different therapeutic agents up to thousands had been tested in vivo as well as in vitro condition to treat cryptosporidiosis. Some agents were active

Corresponding author: Osman Abdel Hameed, Department of Virology, Central Veterinary Laboratory, Sudan,Tel: 00966500727688; E-mail: osmanhs@yahoo.com

Citation: Hameed OA. (2020) A Review of Cryptosporidium Infection in Neonatal Lambs and Camel Calves. J Infect Dis Res, 3(2): 109-110.

against Cryptosporidium infection in vitro condition but showed poor efficacy or no efficacy during treatment therapy under field conditions.

More recently, Huvepharma Bulgaria, has developed Parofor® (Paromomycinsulphate). Paromomycin is a broad-spectrum antibiotic and belongs to the group of amino glycosides. Paromomycin Is poorly absorbed from gastro-intestinal tract and is not inactivated by organic material, remaining inactive form in the intestinal lumen. Two forms of Parofor® were produced by Huvepharma, water powder for use in drinking water or milk replacer. One gram of it contains 100 mg of paromomycin sulphate (= 70 mg paromomycin as base). The second form is Parofor® 140 mg/ml OS, a solution used in drinking water, milk or milk replacer.

Previous studies have shown the efficacy of Paromomycin against Cryptosporidium. Parofor® was first only registered for the treatment of diarrhoea caused by Escherichia Coli but the recognised efficacy against Cryptosporidium leads Huvepharma to obtain an anti-protozoal registration (Parofor Crypto®, EU and July 2018). Reported the successful resolution of Cryptosporidium infection in lambs with Parofor® [21-23].

REFERENCES

1. Agnamey P, Sarfati C, Pinel C, et al. (2000) Evaluation of four commercial rapid immuno chromatographic assays for detection of Cryptosporidium antigen in stool samples: a blind multicentre trial. J Clin Microbiol.
2. Angus KW, Appleyard WT, Menzies JD, Campbell I, Sherwood D (1982) An outbreak of diarrhoea associated with cryptosporidiosis in naturally reared lambs. Vet Rec.
3. Areeshi MY, Beeching NJ, Hart CA (2007) Cryptosporidiosis in Saudi Arabia and Neighbouring countries. Ann Med 27(5).
4. Ayinmode FB, Fagbemi BO (2011) Cross -reactivity of some Cryptosporidium species with Cryptosporidium parvum coproantigen Commercial Elisa kit. Nigeria Vet J 10: 1-4.
5. Current WL (1985) Cryptosporidiosis JA. Vet Med Assoc 187.
6. Celiksoz DS, Kalkank A, Ozcelik S (2005) Prevalence of Cryptosporidium spp. and Giardia spp. in cow and calves in Sivas. Turkey J Vet Sci 29: 995-999.
7. De Graaf, Vanopdenbosch DC, E Ortega-Mora LM, Abbassi H, Peeters JE (1999) A review of importance of cryptosporidiosis in farm animals. Int J Parasitol.
8. Dubey JP, Fayer R (1990) Cryptosporidiosis of man and animals. CRC Press, Boca Raton, Florida.
9. Mohammed EW, Bernard F (2016) J Cam Pract Res 23(2): 283-285.
10. Foreyt WL (2015) Coccidiosis and cryptosporidiosis in sheep and goats. Vet Clin North Am Food Anim Pract 2015: 655-670.
11. Fayer R, Ungar BLP (1986) Cryptosporidium spp and Cryptosporidiosis. Microbiol Rev 50: 458- 483.
12. Hameed OA, Abu-Zeid TESA, Rasool G, Makki A, Taha MK (2019) J Anim Sci Live Product.
13. Nasir A, Avais M, Khan MS, Ahmed N (2009). Prevalence of Cryptosporidium parvum infection in (Pakistan) and its association with diarrhoea in dairy calves. Int J Agric Biol 2009: 221-224.
14. Potter L, Esbroeck VM (2010) Negative staining of Heine foe the detection of Cryptosporidium spp. A fast-simple technique. Open Parasitol J 4: 1-4.
15. Prakash S Prabu K, Palanivel KM (2009), Prevalence of Cryptosporidiosis in dairy claves in Chennai. Tamilnadu. J Vet Anim Sci 5(2): 41-46.
16. Xiao L (2008) Molecular epidemiology of cryptosporidiosis: An update. Exp Parasitol 124.
17. Radostits OC, Hinchciff GK, Constable P (2008) Veterinary medicine: A textbook of cattle, horse, sheep, pigs and goats. Saunders Elsevier, pp: 1483-1540.
18. Shahiduzzaman M, Daugschies A (2012) Therapy & prevention of cryptosporidiosis in Animals. Vet Parasitol 188: 203-214.
19. Viu M, Quílez J, Sanchez-Acedo C, del Cacho E, Lopez-Bernad F, et al. (2000) Field trial on the therapeutic efficacy of paromomycin on natural Cryptosporidium parvum infections in lambs. Vet Parasitol 90.
20. Paraud C, Chartier C (2012) Cryptosporidiosis in small ruminants. Small Rum Res.
21. Snodgrassb DR, Angus KW, Gray EW (1984) Experimental cryptosporidiosis in germfree lambs. J Comp Pathol 94: 141-152.
22. Xiao L, Herd RP, Rings, DM (1993) Diagnosis of Cryptosporidium on a sheep farm with neonatal diarrhoea by immune fluorescence assay. Vet Parasitol 1993: 47-23.
23. Tizpori S, Angus KW, Clerihew LW, Campbell I (1981) Diarrhoea due to Cryptosporidium infection in artificially reared lambs. J Clin Microbiol 14(1): 100-105.