

Case Report

Cryptosporidiosis: An emerging disease in animal and man in the Sudan: Observations on a disease situation in a foreign group of cattle.

Tag Elsir A. Suliman, Husna M. ElBasier and Halima M. Osman.

1 Central Veterinary research Laboratories. P.O.Box: 8067, Soba-Alamarat, Khartoum, Sudan. Mobile +249129461326

Abstract

Oocysts of cryptosporidium were observed in 5 calves in a herd of exotic cattle. Only one calf was found to have watery diarrhea, which recurred 7 days post treatment. The epizootology of the disease was discussed and a possible human transmission and out breaks in children and adults is suggestive.

Key Words: Cryptosporidiosis, foreign breeds, epizootology.

Introduction

Parasites belonging to the genus cryptosporidium are important agents of neonatal diarrhea in calves⁽¹⁾, lambs⁽²⁾, Foals⁽³⁾ and man⁽⁴⁾. They were thought to be host specific⁽⁵⁾ but cross infection had become a fact with many authors⁽⁶⁻⁸⁾. These parasites cause high morbidity and high mortality among neonates under stressful conditions or in association with other enteropathogens such as Rota and Crona virus, and E.coli⁽⁹⁾. The disease was reported in Sudan in calves⁽¹⁰⁾ and in man by⁽¹¹⁾ from children showing gastroenteritis. It is related in adults to HIV infection or in immunocompromised patients.

In this report, we describe a disease situation in a herd of animals and comment on the epizootology of the disease.

Case History and Laboratory Work

A report to the veterinary laboratory at Soba from Al-Ailafoun village, 25 km south east of Khartoum, of recurrent diarrhea in a calf was made. The calf was part of a herd of animals that include eight cows, a bull and nine calves at different ages from less than a month to more than that. The calf that is showing watery diarrhea was less than one month old. It was reported as severely sick and a faecal sample was submitted to the laboratory for investigation. Flootation with sodium chloride was

made and numerous coccidial oocysts were seen. No helminthes ova were seen. The calf was then reported to be given sulphadiazine injections for 5 days by a veterinarian. The owner was asked to submit another faecal sample if the condition did not improve. After a week another faecal sample was submitted reporting that the treatment given had no effect and that the situation did not improve. Zeil Nilson stain⁽¹²⁾ was made on faecal smear on both the first sample and the second. At this level, he was asked to submit faecal samples from the entire herd in the farm. Flootation with sodium chloride was made and faecal smears fixed in methanol (3-5 minutes) and stained with Giemsa stain and batches of faecal smears made from all the faecal samples for Zeil Nelson (fixed by heat) were made. More than fifty high power fields at x 1000 magnification under oil immersion lens were seen. Till it was said as negative. The faecal smears made from the calf with diarrhea were the only stained with Giemsa stain. Measurements were made on the parasites using a stage micrometer to calibrate the objective lens and an ocular micrometer lens was used for measurement.

Results and Discussion

The results of the flootation method showed two samples out of the nine calves with coccidial oocysts. The acid fast stain made, showed that

samples from the diarrhea calf to have numerous cryptosporidium oocysts with a mean number of 16 oocysts per HPE. Another four calves that were clinically normal the acid fast stain described one oocysts per 50 HPE in their faecal samples. The cryptosporidial oocysts were 3-4 µl in length and 2-4 µl in width (mean values). They were deep red with a clear halo around, while using the Giemsa stain they are blue in color and the halo is not as clear as that of the Zeil Nelson stain.

The cause of diarrhea could be due to the high infection of cryptosporidium, although suggested that it is a probable factor putting in mind other enteropathogens^(5, 10). In this connection the cause of diarrhea in an outbreak in calves is cryptosporidia excluding other enteropathogens⁽¹³⁾. The treatment was described as unreliable⁽¹⁴⁾. Sulphaguanidine (cause the diarrhea to recur in 7 days) and Sulphaquinoxaline may reduce the mortality in calves affected with enteric colibacillosis and cryptosporidiosis. The owner was asked to use the above two drugs but he did not come back. In this report the cryptosporidium parasite was described in calves more than a month. Although the parasite was thought to be present in calves less than a month, but it was demonstrated in 28% of cows⁽¹⁵⁾, and in calves less than two months⁽⁸⁾.

The people in the village own animals, cattle, sheep, goats and equines. All of these animals can transmit the disease to people through contamination of food and water. To our knowledge only one study was made in human from Khartoum hospital⁽¹¹⁾.the diagnosis of the disease in calves only in 1995 raises a question as to the possibility of introduction of the disease recently. It could be an old situation in our local breeds but appeared now in the intensive dairy farming using foreign breeds. Otherwise it was introduced together with

the foreign breeds in the last 30 years. Further work is needed to answer these questions.

Acknowledgement

We thank the Director of the Veterinary Research Centre at Soba for the permission to publish this work.

References

1. Snodgrass DR, Angus KW, Gray EW, Keir WA and Clerihew LW. Cryptosporidia associated with rotavirus and an Escherichia coli in an outbreak of calf scour. *Veterinary Record*. 1980; 106(22): 458-460
2. Berg IE, Peterson AC and Freeman TP. Ovine cryptosporidiosis. *Journal of the American Veterinary Medical Association*. 1978; 173(12): 1586-1587.
3. Gajadhar AA, Caron JP and Allen JR. Cryptosporidiosis in Two Foals. *Canadian Veterinary Journal*. 1985; 26(4): 132-134.
4. Navin TR and Juranek DD. Cryptosporidiosis: clinical, epidemiologic, and parasitologic review. *Reviews of Infectious Diseases*. 1984; 6(3): 313-327
5. Pohlenz J, Moon HW, Cheville NF and Bemrick WJ. Cryptosporidiosis as a probable factor in neonatal diarrhea of calves. *Journal of the American Veterinary Medical Association*. 1978; 172(4): 452-457.
6. Anderson BC. Prevalence of Cryptosporidium muris-like oocysts among cattle populations of the United States: preliminary report. *Journal of Protozoology*. 1991; 38(6): 14S-15S.
7. Hill BD, Blewett DA, Dawson AM and Wright S. Analysis of the kinetics, isotype and specificity of serum and coproantibody in lambs infected with Cryptosporidium parvum. *Research in Veterinary Science*. 1990; 48(1): 76-81.
8. Garcia AM and Lima JD. [Frecuencia de Cryptosporidium em bezerros lactentes de

- rebanhos leiteiros de Minas Gerais]. *Arquivo Brasileiro De Medicina Veterinária E Zootecnia*. 1993; 45(2): 193-198. (Portuguese)
9. Aurich JE, Dobrinski I and Grunert E. Intestinal cryptosporidiosis in calves on a dairy farm. *Veterinary Record*. 1990; 127(15): 380-381.
 10. Elnour TM and Mohamed EFH. Cryptosporidiosis as a probable cause of neonatal calf diarrhea. *Sudan Journal of Veterinary Science and Animal Husbandry*. 1995; 34(1/2):
 11. Robinson M, Hart CA, Baxby D, Battin M, Suliman GI, el Seed AM and Coulter JB. Cryptosporidium as a cause of gastro-enteritis in Sudanese children. *Annals of Tropical Paediatrics*. 1986; 6(2): 155-156.
 12. Anon. Publication of the Centre for Tropical Veterinary Medicine, University of Edinburgh. Hunter AG (editor). 1985.
 13. Tzipori S, Campbell I, Sherwood D, Snodgrass DR and Whitelaw A. An outbreak of calf diarrhoea attributed to cryptosporidial infection. *Veterinary Record*. 1980; 107(25-26): 579-580.
 14. Blood DC; Radostits OM and Henderson JA. *Veterinary medicine: A textbook of the diseases of cattle, sheep, pigs, goats and horses* 6th Edition. London: Baillière Tindall, 1983.
 15. Rodriguez N, Fustes E and Gqwez E. Presence of cryptosporidium in cows and their calves. *Revista de Salud Animal*. 1989; 11(3-4): 204-207.