

CRYPTOSPORIDIUM IN SHEEP AS A SOURCE FOR HUMAN INFECTION

M. REZAEIAN, * A. SHAHMORADI, ** AND A. DALIMI **

From the * Dept. of Protozoology, School of Public Health, Tehran University of Medical Sciences, Tehran, and the ** Dept. of Parasitology, Medical Sciences Faculty, Tarbiat Modarres University, Tehran, Islamic Republic of Iran.

ABSTRACT

Cryptosporidium is a protozoan parasite that infects epithelial cells of the intestine in a wide variety of vertebrates. During the last decade, cryptosporidiosis has emerged as a cause of diarrhea in man. Most of the patients have AIDS, and have had contact with infected animals. In this study 510 samples were collected from sheep and examined for detection of this parasite. The result showed that 26.86% of animals were colonised. Fattened sheep were less infected than lambs and those kept for milk.

MJIRI, Vol. 6, No. 4, 273-274, 1993.

INTRODUCTION

Cryptosporidium is a coccidian protozoa which causes a zoonosis illness in man and many animals. Although it has been known for over 85 years, its importance was not clear until recently.^{5,12} It was first described in 1907 by Tyzzer in asymptomatic laboratory mice.⁵ This protozoa produces prolonged diarrhea in immunocompromised patients and significant though self-limiting enteritis in the immunocompetent host.¹² The organism was considered a benign commensal until 1955 when it was recognized as a significant cause of disease in animals.¹² The first cases of human cryptosporidiosis were reported during the period 1976-81 and it had been reported from patients with AIDS, acute leukaemia, thalassemia, immunocompromised, animal handlers, congenital immunodeficiency, homosexual men, travelers to endemic areas, household contacts of infected patients, hospital personnel, residents of the developing countries and children in day care centers.^{7-9,11}

Because of the close relation between man and domestic animals, like sheep, we examined sheep in slaughter-houses near Tehran.

MATERIALS AND METHOD

In this study, 510 samples were collected from the intestinal contents of sheep (*Ovis aries*), in four different slaughter-houses around Tehran.

Of the sheep examined, 210 sheep were fattened, 150 of them were lamb, and the rest were kept for milk (100 were adult and 50 were less than 2 years). For this study, the samples were fixed in 10% formaldehyde, then centrifugated at 2500 R. P. M. for 10 minutes. The smear was dried and fixed by methanol and stained by modified cold and hot Ziehl-Neelson method.¹²

RESULTS

In this study, a total of 26.86% of sheep were colonised by cryptosporidium. The infection rate in fattened sheep was lower (40%) than in lambs, and in those sheep who were preserved for milk, about 40.5%. The infection rate among the sheep in summer and in winter were 5.3% and 26.86% respectively. These results showed that prevalence of the parasite in the winter was much higher than in summer, although in

Cryptosporidium in Sheep

Table 1. Infection rate of cryptosporidium in sheep of slaughter houses of Tehran

		Warm Season					Cold Season				
		examined		infected		uninfected	examined		infected		uninfected
		NO.	no.	%	no.	%	NO.	no.	%	no.	%
Adult	F	40	1	2.5	39	97.5	60	20	33.3	42	66.7
	P	45	1	2.2	44	97.8	100	38	38	62	62
	T	85	2	2.35	83	97.65	160	58	36.2	104	63.8
Lamb	F	30	2	6.6	28	94.4	150	60	40	90	60
	P	35	4	11.4	31	88.6	50	21	42	29	58
	T	65	6	9.23	59	90.77	200	81	40.5	119	59.5
Total		150	8	5.3	142	94.70	360	129	35.86	223	61.9

F = Fattened P = Preserved for milk T = Total

some reports the ratio is opposite to our study.⁵ The intensity of the parasite in the winter was also more than in summer. Infection was mainly accompanied with diarrhea and was more prevalent in younger animals (Table 1).

DISCUSSION

The infection rate in fattened sheep was lower, because they were in better condition, and cold season (autumn and winter), and contaminated environment produced more infected animals. This observation conflicts with results found in other studies.⁵ "Z"-test showed significant differences between the results in summer and winter (P.V = 0.001).

Although infection rate in this study was 26.86% but in some reports, prevalence reaches as high as 100%.⁵ In Iranian urban life conditions there is close contact with domestic animals, like sheep.

Infection rates have been reported from all over the world in various wild and domestic animals. Because sheep are an important natural source of cryptosporidium in our country, further study is necessary.

AKNOWLEDGMENTS

We would like to thank Dr. Semnani, Mr. Mirnia, Mr. Nasser and their coworkers, Dr. Saffarian and his coworkers, and the kind personnel in the slaughter houses.

REFERENCES

1. Baron E, Schenone C, Beverly T: Comparison of three methods for detection of cryptosporidium oocysts in a low-prevalence population. *Clin Microbiol* 27(1): 223-224, 1989.
2. Baxby D, Blundell N.: Sensitive rapid simple methods for detecting cryptosporidium in faeces. *The Lancet*, 2:(8359), 1149, 1983.
3. Baxby D, Blundell N : Recognition and laboratory characteristics of an atypical oocyst of cryptosporidium. *J Inf Dis* 158(5): 1038-1045, 1988.
4. Gasmore D P, Armstrong M, Sands R L: Laboratory diagnosis of cryptosporidiosis. *J Clin Pathol* 38: 1337-1342, 1985.
5. Chermette R, Boufassa S O: Cryptosporidiosis: a cosmopolitan disease in animal and man. pp. 1,4,24, Pub O.I.E. 1990.
6. Hansson A D: Cryptosporidiosis in Liberian children. *Lancet* 3(31):734, 1984.
7. Holley H P, Bruce H T: Cryptosporidiosis in a patient receiving immunosuppressive therapy. *Dig Dis Sci* 31(9): pp.1004-1007, 1986.
8. Lewic I J, Hart C A, Baxby D: Diarrhea due to cryptosporidiosis in acute lymphoblastic leukaemia. *Arch Dis Child* 52(60): 60-62, 1985.
9. Nouri M: Cryptosporidium infection in human diarrhea patients in West Azarbaijan, Iran. *Med J Islam Rep Iran* 1(2): 35-38, 1991.
10. Pitlik E D, et al: Human cryptosporidiosis; spectrum of Disease. *Arch Inter Med* 143: 2269-2275, 1983.
11. Roncorni A J, Gomes M A: Cryptosporidium infection in renal transplant patients. *J Inf Dis* 160(3): 559, 1980.
12. Soare R, Armstrong D: Cryptosporidium and cryptosporidiosis. *Review Inf Dis* 8(6): 1012-1023, 1986.
13. Tzipori S : Cryptosporidiosis and routine parasitological diagnosis. *J Inf Dis* 156(1): 248-252, 1987.
14. Tzipori S: Cryptosporidiosis in perspective. *Advances in parasitology* 27: 63-121, 1988.