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SOME STUDIES ON CRYPTOSPORIDIOSIS IN CALVES IN SOHAG GOVERNORATE

(With 4 Figures and 3 Tables)

By

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بعض الدراسات عن مرض الكربتوسبوريديوزيز في العجول بمحافظة سوهاج

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قام الباحثون بفحص عدد ٤٨٠ عينة براز جمعت من ثلاث مجموعات من العجول بمزرعة الديابات لانتاج الالبان والحوم في محافظة سوهاج وذلك لعمل مسح طبى عن وجود طفيل الكربتوسبوريدا في العجول امريضة والسليمة ظاهريا وقد استخدمت صبغة الزيلنيلسون المتطورة في الكشف عن طفيل الكربتوسبورديم. وقد أوضحت النتائج عن وجود طفيل الكربتوسيورديم في الثلاث مجموعات من العجول وكانت اعلا نسبة للاصابة بهذا الطفيل بين العجول حديثة الولادة حيث بلغت نسبة الاصابة ٨٨ر٥١ ٪. وقد أوضحت الدراسة أيضا أن هذا الطفيل يزداد انتشارا في فصلي الصيف والخريف ومن أهم اعراض هذا الطفيل في الحيوانات هو حدوث الاسهال المصاحب بالجفاف.

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CRYPTOSPORIDIOSIS IN CALVES

SUMMARY

The protozoan *Cryptosporidium* an animal pathogen has recently ben found to be a common cause of gastroenteritis in immuno-competent calves *(O'DONOGHUE , 1985)*. During one year study on four hundred and eighty Friesian calves (below two years old) at El-Diabat farm for milk and meat production in Sohag Governorate. *Cryptosporidium* oocysts were detected in the faecal samples of 163(33.96%) out of 480 cases by microscopical examination of modified Ziehl-Neelsen stained fixed smears. *Cryptosporidium* was the sole pathogen detected in 95(19.79%) of the positive cases, in the other hand 68 cases (14.17%) mixed infection were observed with one or more other intestinal parasites. The highest incidence of infection was recorded in the group one day to one month old. As regards the sex, no specific difference was discernible. The highest infection with the parasite was during the summer and autumn seasons. Most of the calves deficate watery diarrhoea with a mild to moderate degree of dehydration, the diarrhoea was noticed for less than seven days.

INTRODUCTION

Parasitic infestation is considered as one of the most important factors causing diarrhoea among animals in tropical and subtropical countries. In young calves, it really lowers their efficiency and even lowers the resistance to disease or even leading to death. Cryptosporidia are coccidian parasites of the genus *Cryptosporidium* which have been shown recently to be important as causes of gastroenteritis and diarrhoea in many species of animals including, humans, domestic, exotic mammals, birds, reptiles, fish and do not seen to be host species speciific *(TZIPORI and CAMPBELL, 1981; BROWNSTEIN* et al., *1977; TZIPORI, 1983; ANGUS, 1983; FENWICK, 1983; MA & SOAVE, 1983; ANDERSON, 1982; BERK* et al., *1984; GOHEN* et al., *1984; CURRENT, 1984 & 1985; KULLER* et al., *1984; NAVIN & JURANEK, 1984; SZABO & MOORE, 1984; VAN WINKLE, 1985 and O'DONOGHUE, 1985)*.

LEVINE (1984) classified four species according to host as *Crypotosporidium muris* in mammals, *C.meleagridis* in birds, *C.crotali* in repitiles and *C.nasorum* in fish.

The first description of bovine Cryptosporidiosis was in 1971 which was at 8 months old heifer *(PANCIERA* et al., *1971)* there have been several reports on *Crypotosporidiois* in calves

with neonatal diarrhoea (*BARKER & CARBONELL, 1974; MEUTEN et al., 1974; SCHMITZ & smith, 1975; MORIN et al., 1976; POHLENZ et al., 1978; BERGELAND et al., 1979; NAGY et al., 1979; JERRETT & SNODGRASS, 1981; ANDERSON & BULGIN, 1981 and POL et al., 1982*). The youngest calf reported to be affected with the disease was 4 days (*SNODGRASS et al., 1980*) and the oldest was 26 days (*TZIPORI et al., 1980*).

In Egypt, the *Cryptosporidium* species in calves were previously reported by *SOBIH and SABAH (1987)*.

The object of this study is to explore the incidence and epidemiology of *Cryptosporidium* infection among diarrhoeic Friesian calves at El-Diabat farm for milk and meat production in Sohag Governorate.

MATERIAL and METHODS

The present study was conducted on four hundred and eighty Friesian calves (below two years old), locally bred at El-Diabat farm for milk and meat production in Sohag Governorate with acute diarrhoea of less than four days duration between January and December, 1992. The number of cases examined per month was forty. For each animal, a case history was obtained and the faecal samples were freshly collected individually in clean plastic bags and were examined within two hours after collection for the presence of *Cryptosportidium* oocysts and other parasites. The examination of faecal samples included macroscopical and microscopical examination. A thin direct and centrifugation floatation smears were prepared on glass slides (*soulsby, 1982*), air dried, heat fixed and stained with modiified Ziehl-Neelsen technique as previously desribed by *HENRIKSEN and POHLENZ, 1981*).

RESULTS

The results are explained in tables as follows:

Table 1 shows the monthly prevalence of *cryptosperidium* infection at Sohag Governorate and revealed that the highest infection rate was in August (95%) and the lowest was in January (7.5%).

Table 2 shows the prevalence of *Cryptosporidium* infection in correlation with age at Sohage Governorate and revealed that the infection rate was highest in one day to one month old (51.88%) and the lowest in one year to two years (18.75%).

Table (3) shows the clinical features of 163 calves with diarrhoea associated with *Cryptosporidium* infection at Sohag Governorate, it revealed that the diarrhoea is the most important clinical sign asscіated with fever, anorexia and dehydration.

The present data showed that 68 cases (14.17%) of *Cryptosporidium* oocysts were found with one or more other intestinal parasites (*coccidia* oocysts and *Ascaris Vitulorum* eggs).

The highest incidence of infection was recorded in the group one day to one month old. As regards the sex, no specific difference was discernible.

DISCUSSION

In the present study, the prevalence of cryptosporidiosis among the 163 diarrhoeic Friesian calves out of 480 examined (33.96%) Table (2). The data reported there are higher than that reported by *NAGY* et al. , *1979; MORIN* et al., *1976; RAHMAN* et al., *1984; SOBIH* et al., *1986 and SOBIH & SABAH, 1987),* but this data is lower than that reported by Moon and agrees with *POHLENZ* et al., *1978.* Such variation could be explained by different localities. Oocysts recovered are spherical in shape within a clear hols, ranged in size from 5-7 u in diameter, stained pink "deep red" with the modified Ziehl-Neelsen technique, oocysts may be present scattered or in groups Fig. (4) and the background appeared blue in color.

Concerning the monthly prevalence of Cryptosporidia in calves, it was observed that the highest infection rates were in July, August and September (62.5%, 95.0% and 75%, respectively) while the lowest were during November, December and January (12.5%, 10% and 7.5%, respectively). Otherwise, the infection rate ranged between 15% and 55% during the remaining months Table (1) & Fig. (1). These differences might be attributed to the climatic variation.

Regarding the prevalence of *Cryptosporidium* infection incorrelation with age, it was observed that the infection rate was highest in one day to one month, moderate in one month to one year and the lowest in one year to two years (51.88%, 31.25% and 18.75%, respectively) Table (2). The higher prevalence of *Cryptosporidium* infection in the young aged group and lower prevalence in the oldest calves examined indicates increased susceptibility of young calves.

Concerning the clinical features associated with *Cryptosporidium* infection, it was noticed that diarrhoea is the most important clinical sign and it was associated with fever, anorexia, depression and dehydration Table (3) and Fig. (3), these findings agree with mentioned by *MEUTEN* et al., *1974; POWELLM* et al., *1976 and JERRETT and SNODGRASS, 1981.*

As calves are considered as sources of animal protein, their close contact with persons working in military services,

their infection with such parasites cause economic losses due to diarrhoea and loss of body weight. The danger of this parasite lies in the transmission of infection to handlers or other animals as the life cycle is direct and there is clear association between bovine Cryptosporidiosis and human infections as mentioned by *AUGUS (1983)*.

CONCLUSION

From the provided data, it can be concluded that the calf Gryptosporidiosis is not rare. Its symptoms are not sufficiently characteristic to allow clinical diagnosis, we suggest that the parasite should not be overlooked in all cases of gastroenteritis in immunocompromised calves during all seasons.

Imptovrment of environmental health conditions through meticulous observance of sanitary procedures, segregation of infected animals, hygienic disposal of infected manure, neomatal calves should receive colostrum as soon as possible after birth vrowding should be avoided, given supportive therapy, all of these may help to reduce the occurrence of the infection in the calf population.

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Table (1): Monthly prevalence of Cryptosporidium infection at Sohag Governorate.

Months		No. of examined samples	No.of positive samples	% of infection
January	1992	40	3	7.50%
February	1992	40	6	15.00%
March	1992	40	6	15.00%
April	1992	40	9	22.50%
May	1992	40	10	25.00%
June	1992	40	22	55.00%
July	1992	40	25	62.50%
August	1992	40	38	95.00%
September	1992	40	30	75.00%
October	1992	40	5	12.50%
November	1992	40	5	12.50%
December	1992	40	4	10.00%

Table (2): Prevalence of Cryptosporidium infection in correlation with age at Sohag Governorate.

Infected age group	No. of exam. samples	Negative cases No.	Negative cases %	Positive cases No.	Positive cases %
One day-one month	160	77	48.12%	83	51.88%
One month-12months	160	110	68.75%	50	31.25%
One year-two years	160	130	81.25%	30	18.75%
Total	480	317	66.04%	163	33.96%

Table (3): Clinical features of 163 calves with diarrhoea associated with Cryptosporidium infection at Sohag Governorate

Parasitic infestation	No. of +ve cases	fever	Diarrhoea						Duration of diarrhoea		Severity of dehydration		
			Watary		Bloody	Mucoid		Bloody mucous	(7 days	>7 days	Mild	mode-rate	Severe
			Yellow	Green		Yellow	Green						
Cryptosporidium alone	95 19.79%	28 29.04%	26 27.37%	16 16.84%	0.00%	18 18.95%	12 12.63%	23 24.21%	65 68.42%	30 31.58%	45 47.37%	35 36.84%	15 15.79%
Cryptosporidium with other intestinal parasites	68 14.17%	60 88.24%	17 25.00%	12 17.65%	1 1.47%	13 19.12%	9 13.24%	17 25.00%	48 70.59%	20 29.41%	35 51.47%	26 38.24%	7 10.29%

Fig. (1): Monthly prevalence of cryptosporidium infection at Sohag Governorate

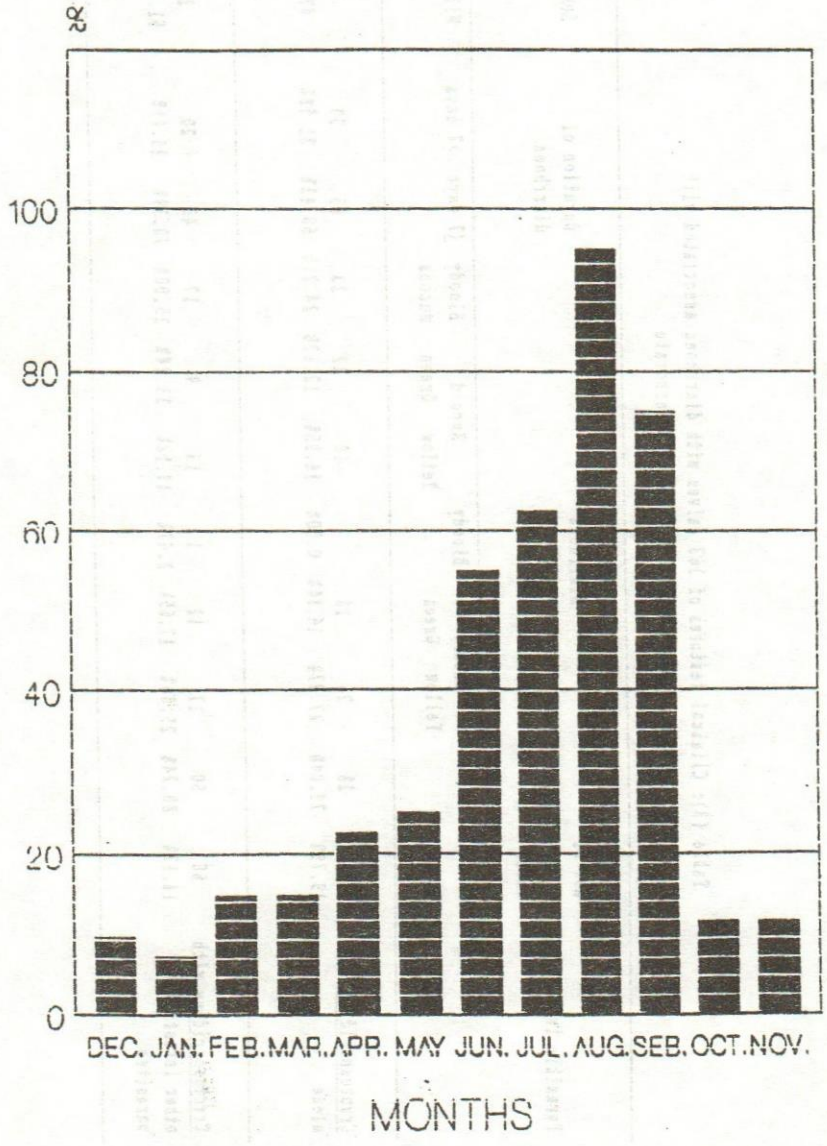
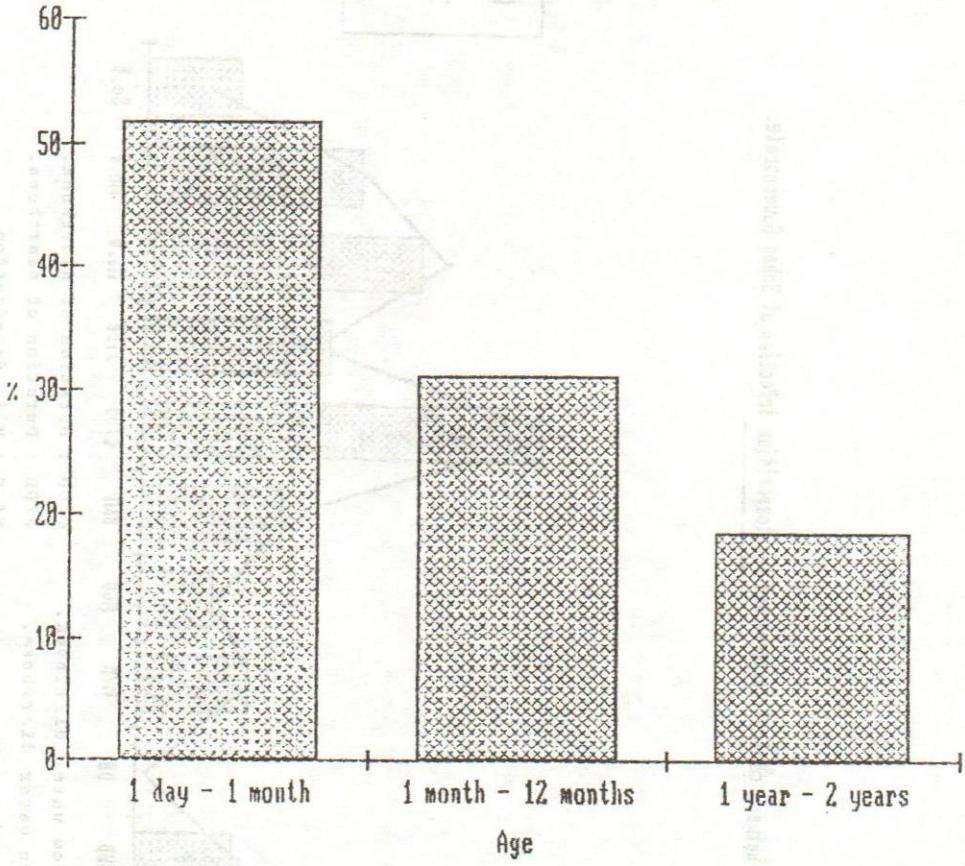


Fig.(2):Prevalence of Cryptosporidium infection in correlation with age at Sohag Governorate.



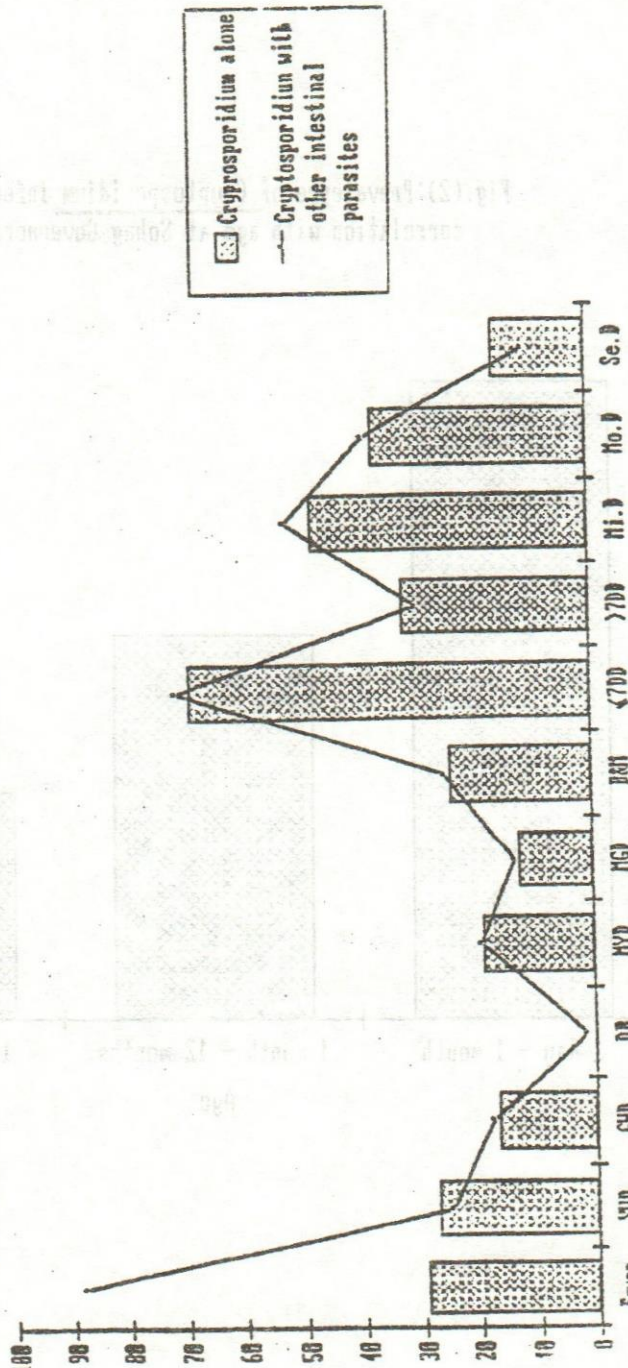


Fig.(3):Relation between clinical features and Cryptosporidium infection at Sohag Governorate.

YWD : Yellow water diarrhoea.
GWD : Green water diarrhoea.
RD : Bloody diarrhoea.
MYD : Mucoid yellow diarrhoea.
MGD : Mucoid green diarrhoea.
BAH : Bloody and mucoid.
<7DD : Duration of diarrhoea.
>7DD : Duration of diarrhoea.
Mi.D : Mild dehydration.
No.D : Moderate dehydration.
Se.D : Severe dehydration.

Fig. (4): Oocysts of Cryptosporidium present scattered or in groups in fixed faecal smear stained with modified Ziehl-Neelsen stain.