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SOME STUDIES ON PARASITIC INFECTION IN MINIATURE HORSE

(With 2 Tables and 4 Figures)

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بعض الدراسات على الطفيليات التي تصيب الحصان القزم

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تم تجميع عينات براز من ١٨ حصان قزم للتعرف على مدى إصابتها بالطفيليات . وجد أن هناك ثلاثة أنواع من بويضات الديدان بنسبة إصابة ٢٤% وكانت موزعة كالأتي ٤٤,٥% بها بارأسكارس إكورم ، ١٦,٧% بها سترونجيلس و ١١,١% بها ديكتوكاولس . ومن ناحية أخرى وجد ثلاثة أنواع من حويصلات الأيمريا بنسبة ٤٦,٣% وقد صنفت هذه الأنواع الثلاثة بالترتيب ١ ، ٢ ، ٣ بنسبة اصابة ٢٢,٢% ، ٥٠% و ٦٦,٧%. على الترتيب .

SUMMARY

Faecal samples of 18 Miniature horse were examined for parasitic infection. Three species of Helminthes were detected with a total percentage of 24 %. The isolated Helminthes eggs were *Parascaris equorum* egg 8 (44.5%), small *Strongyles* spp. 3 (16.7%) and *Dictyocaulus* species 2 (11.1%). Three species of *Eimeria* were detected with a total infection rate of 46.3%. The isolated *Eimeria* were named as *Eimeria* spp. 1, 2 and 3 and with a percentage of 22.2%, 50 % and 66.7% respectively.

Key words: *Parasitic infection, miniature horse*

INTRODUCTION

Miniature horses were recently imported from North Carolina (U.S.A) to Egypt. They are very small horses, their bodies are even more smaller than ponies (Chen and Wang, 1996), they are used for amusement in foreign countries. Equines are the host to approximately 54 species of worms (Duncan, 1974). Moreover, the annual losses of equines due to parasitic diseases were estimated to be 15% of actual value of total Egyptian equines (Ezzate, 1960). The present study actually was carried out to spot light on the endoparasites among such equine species and the possible of endoparasites they have introduced to our Egyptian equines.

MATERIAL and METHODS

Faecal samples were collected from the rectum of 18 miniature horse in plastic bags. Samples were examined in the same day of collection by sedimentation and floatation techniques according to Soulsby (1988). The different species of eggs and coccidian oocysts were detected by microscope and measured by eye-piece micrometer.

The isolated oocysts were identified according to Morgan and Hawkins (1949); Lapage (1956); Levine (1961) and Soulsby (1988), depending on the presence or absence of micropyle and/or cap. Forty sporulated oocysts of each *Eimeria* species were measured using the eye piece micrometer. Moreover, the oocysts were examined daily for determination of sporulation time of each *Eimeria* species (Soulsby, 1988).

The percentage of infection was carried out by Mc-Master technique according to Gordon and Whitelock (1939).

$$\textit{Number of eggs or oocysts} = \frac{\textit{No. of eggs or oocysts in 2 chambers X 100}}{2}$$

RESULTS

The results of the present investigation showed that the 18 cases of miniature horse imported from North Carolina were infected with three species of helminthes (Table 1 and Fig. 1) and three species of

Eimeria (Table 1 and Fig. 2, 3 & 4). The morphological characters of the isolated *Eimeria* species are presented in Table (2).

As regard to the helminth eggs, three types of nematode eggs were found:

Parascaris equorum: The eggs are yellowish brown in colour, subglobular or spherical with a thick pitted albuminous layer and 91.32 – 99.5 μ in diameter.

***Dictyocaulus sp.*:** Thin shelled, transparent egg, contains the first stage larva. Its size varied from 88 X 51 to 92.5 X 56.5 μ.

Small *Strongylus sp.*: Oval, thin shelled with segmented embryo. It measures 71 X 37.5 to 83 X 45.5 μ.

Depending on the morphological characters and the sporulation time of each *Eimeria* species, they were tabulated into 3 unidentified species numerically called *Eimeria* spp. 1, 2 and 3.

DISCUSSION

Miniature horses are recently introduced to Egypt, their fecal examination revealed the three species of *Eimeria* (Table 2); which are named *Eimeria* spp. 1, 2, 3 and three species of helminthes eggs.

It is worthy to mention that the three *Eimeria* species which are found differ from other species which were recorded in Egypt. The morphological characters of *Eimeria* spp. 2, 3 and sporulation time differs from that recorded by Morgan and Hawkins (1949); Levine (1961); Soulsby (1988) and Arafa (1998) while *Eimeria* sp. 1 is similar to *E. leukarti* in shape and sporulation time but differs in its size.

The total infection rate of different *Eimeria* species is 46.3%. *Eimeria* sp. 1 is 4 (22.2%), *Eimeria* sp. 2 is 9 (50%) and *Eimeria* sp. 3 is 12 (66.7 %). While *E.leukarti* was isolated from equines by Bauer and Stoye (1984) with a percentage of 1%; Kinis et al. (1985), 1.6%; Ozer and Kucukerden (1993). 2.2 % for *E. uniungulati*, 0.9 % for *E. solipedium*; Beelitz et al. (1994) isolated *E. leuckarti* from mare (80 %); Battelli et al. (1994) isolated it from 6 foals, 2 stallions and 1 mare out of 51 horses.

The infection rate of different helminthes which are isolated from miniature horses is 24%. The detected helminthes are *Parascaris equorum* egg 8(44.5%), small *Strongylus* spp. 3(16.7%) and *Dictyocaulus* species 2(11.1%). Alibasoglu and Yaleiner (1965); Gorezynski et al. (1970); Graber (1970); Brem and Wojteck (1972),

Erdogan et al. (1973); Cotteleer and Faneree (1974); Mirck (1978); Ambrosi (1981); Gothe and Heil (1984); Lyons et al. (1990) and Alani et al. (1992) isolated *Parascaris equorum* from equines with a percentage of 12%, 25 % from horses in farm and 83% from horses in village 26%, 9%, 5.8%, 6.2%, 6.1%, 25.3%, 2.8%, 75%, 63.3% respectively. Dealing with the small *Strongylus* spp., our results showed that 16.7% of miniature horses were infested. The same parasite was isolated from equine by Manuel and Franco (1965) – 91.4%; Roneus (1971) – 80%; Brem and Wojteek (1972) – 76%; Mirek (1978) – 57.3%; Ambrosi (1981) – 98.2%; Gothe and Heil (1984) – 88.7%; Lyons et al. (1990) – 95%; Alani et al. (1992) – 63.3%.

Dictyocaulus species was isolated in the present study with a percentage of 11.1% which is lower than that recorded by El-Sokkary (1981) 88.5 % and Khalifa et al. (1988) 83%. The morphological characters of each type of eggs agreed with those of Soulsby (1968) and Dietz and Wiesner (1984).

The variation in the percentage of infestation may be attributed to age factor, environmental contamination and unhygienic disposal of animal manure that play a role in spreading of infection.

LIST OF FIGURES

Fig. 1: Helminths eggs recovered from miniature horse.
- **1.a:** *Parascaris equorum* egg X 630.
- **1.b:** *Dictyoculus* sp. egg X 400.
- **1.c:** Small *Strongylus* sp. X 400.

Fig. 2: *Eimeria* sp. oocysts type 1 X 1000 .

Fig. 3: *Eimeria* sp. oocysts type 2.
- **3.a:** Non sporulated X 400.
- **3.b:** Sporulated X 1000.

Fig. 4: *Eimeria* sp. oocysts type 3.
- **4.a:** Non sporulated X 630.
- **4.b:** Sporulated X 630.

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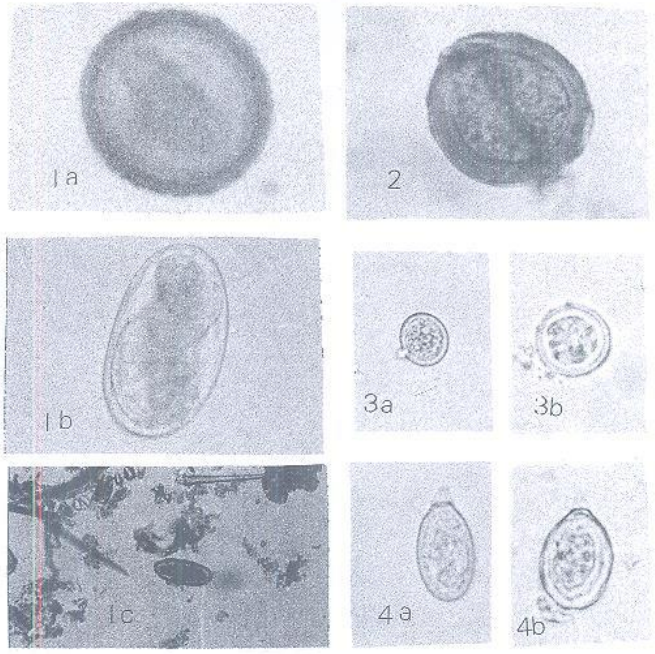
Table 1: Prevalence of parasitic infection among 18 cases of miniature horse.

Isolated parasite Species	Number and percentage of positive cases
Parascaris equorum	8 (44.5 %)
Dictyoculus sp	2 (11.1 %)
Small *Strongylus sp*	3 (16.7 %)
Total	**24 %**
Eimeria sp. 1	4 (22.2 %)
Eimeria sp. 2	9 (50 %)
Eimeria sp. 3	12 (66.7 %)
Total	**46.3 %**

Table 2: Morphological characters of different *Eimeria* species isolated from miniature horse.

	Sporulation time (days)	Size in Micron	Shape	Micropyl	Micropyl cap	Oocystic R. B.	Sporocystic R. B.	Stieda B
Eimeria sp. 1	22	45 X 54	Ovoid dark brown, thick wall	+	-	-	+	-
Eimeria sp. 2	22	26.32 X 16.92	Spherical, orange red, double contoured	-	-	-	+	-
Eimeria sp. 3	35	31.2 X 18.75	Elliptical , thin wall	+	+	-	+	-

R. B. = Residual body. B = Body.



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