The Iraqi J. Vet. Med. 19 & 20 , No. (2) , 1995-1996

PREVALENCE OF GASTROPHILUS LARVAE IN DONKEYS

SAMI R. ALI, RAFAA Y. AL- KUBAISEE AND RAAD H. RAHIF

Department of Parasitology, College of Vet. Medicine, Univer. of Baghdad.

SUMMARY

The stomach, small and large intestine of 140 donkeys were examined for Gastrophilus larvae. The rate of infection was 45%, 6.4% and 7.8% for Gastrophilus intestinalis, G. nasalis G. pecorum, respectively, with the mean larval counts of 3rd instars; 25.8, 10.4 and 27.7, for the respective species. Excepting the month October, third instars of G. intestinalis were found throughout the year. The peak of infection (87.5%) was recorded in February, while the lowest rate (7.1%) was in November. This rate and mean larval burden seemed to decline with the age of the host. The sex of the animals had no effect on the rate of infection. G. pecorum, and G. nasalis are reported for the first time in Iraq and occurred only during the months of June, August and September.

INTRODUCTION

In many parts of the world G. intestinalis and G. nasalis are the most common two species of the genus: Gastrophilus (1-7). In Iraq, G. intestinalis has been isolated from donkeys and horses (8).

It has been reported that adults of G. intestinalis are active during Summer and Autumn, and attack horses to lay eggs on the hair of legs, shoulders and neck (7, 9-12). The resulted larvae, often as a result of self grooming, migrate through the tissue of the mouth, molt to 2nd instar and travel to the stomach, where they develop and

mature before passing in the faeces of the host following Spring (7, 10, 13).

Drudge et al. (4) and panitz (5) considered that the second instar becomes 3rd instar in 3-5 weeks. The newly emerged 3rd instar may be found in the stomach 5-7 weeks after entrance of the 1st instar to the mouth. It is thought that the 3rd instar stays in the stomach for about 9-12 months (13) before being expelled in the faeces, where they pupate on the ground and develop to adult flies 3-5 weeks later.

The aim of this study is to illustrate the prevalence and seasonal incidence of Gastrophilus larvae among equine in Iraq.

MATERIALS & METHODS

A total of one hundred and forty (67 males & 73 females) of various ages of those animals were necropsied between June 1989 and April 1992 at Al- Zawraa Zoo in Baghdad. The animals were brought from province of Iraq (Baghdad, Babylon, Anbar, Diala and Wasset).

The stomach, small and large intestine were cut, opened and examined for the presence of Gastrophilus larvae. The recovered larvae were preserved either in 10% formalin or 70% alcohol. Species were identified according to Zumpt (13).

RESULTS

The number of animals infected with Gastrophilus species was 65, representing 46.4% of the animals examined, with the rate of infection being 45%, 6.4% and 7.8% for G. intestinalis (2nd and 3rd instars), G. nasalis (3rd instar) and G. pecorum (3rd instar), respectively. The mean larval burden in these animals was 25.8, 10.4 and 27.8, for the respective species.

The 2nd instars of G. intestinalis occurred during November, December, January and February with the rate of infection being 50%, 100%, 66.6% and 14.2%, respectively, and a mean larval

burden of 5, 17, 20 and 1, for the respective months. With the exception of October, the 3rd instars were found throughout the year.

The 3rd instars of G. nasalis and G. pecorum occurred during June, August and September (Table 1). Of the animals infected with the first species 55.5% were found to harbour the 3rd instars in their duodenum rather than the stomach. The two species were reported for the first time in Iraq.

There was a negative correlation between the age of the animals and the rate of infection with G. intestinalis larvae (Table 2). However, sex had no effect on the rate of infection.

DISCUSSION

Results obtained from this study indicate that the prevalence of G. intestinalis and G. nasalis are lower than those reported for horses in Ireland (6); Morocco (7), Northern England (10), U.S.A. (1, 4, 5) and New Zealand (3). The infection rates by those workers varied from 90 to 100% for G. intestinalis and 24.4- 94.7% for G. nasalis.

The mean larval counts of those two species were also low compared to those reported by Schooley (1); Kettle (3); Drudge et al. (4); Hatch et al. (6) and Pandy et al. (7). These differences could be attributed to geographical locality and climate; species; breed and age of the host; number of equine in a given area; method of animal husbandry, in particular, grooming of animals during the activity period of the fly and the strain of the parasite itself which might play a role in this regard (6,7).

None of the available studies referred to G. pecorum, while we have found this species with a rate of infection reaching 7.8%.

The present study showed that the infection with G. intestinalis larvae occurred throughout the months of the year with the exception of October. The highest incidence appeared in winter (77.5%); these findings are in consistence with those of Solusby (10); Zumpt (13) and Duncan (14). Owing to the insufficient number of animals

infected with the other two species, no reliable interpretation could be given for seasonal variation and effect of age and sex.

A decline in the rate of infection and mean larval counts with age of the animal was in agreement with that reported by any Pandy et al. (7) and Edwards (10). This might be due to the immunity resulting from previous infections. It could also be due to a non- specific response, such as thinkening of the stomach wall which makes larval attachment more difficult (7, 10).

It has been reported that Gastrophilus larvae may cause certain pathological changes in the stomach of horses (2, 7, 9). Therefore, it is advisable to combat adult flies to minimize the chance of laying their eggs on the animals, groom the animals during Spring and Summer and treat the animals in late Autumn to remove most of the larvae acquired during the year.

ACKNOWLEDGMENT

We would like to thank Dr. Adel S. Moosa, the veterinarian at Al- Zawraa Zoo in Baghdad for facilitating our visits to the zoo.

Table 1 : Monthly prevalence of 3rd instar larvae of G.intestinalis, G.nasalis and G.pecorum in donkeys.

Months	No. of infected animals	G.intestinalis			G.nasalis			G.pecorum			Total	
		No. of infected animals	% of infected animals	Mean no. of larvae (range)	No. of infected animals	% of infected animals	Mean no. of larvae (range)	No. of infected animals	% of infected animals	Mean no. of larvae (range)	No. of infected animals	% of infected animals
January	5	3	60	16(3-34)	0	0	0	0	0	0	3	60
February	8	7	87.5	12.8(1-29)	0	0	0	0	0	0	7	87.5
March	5	2	40	16.5(16-37)	0	0	0	0	0	0	2	40
April	6	4	66.6	25(10-50)	0	0	0	0	0	0	4	66.6
May	9	4	44.4	77.5(33-136)	0	0	0	0	0	0	4	44.4
June	17	10	58.5	27.7(13-68)	4	23.5	7.5(1-16)	1	5.8	4	11	64.7
July	10	4	40	43.25(14-73)	0	0	0	0	0	0	4	40
August	7	5	71.4	38.2(21-66)	3	42.8	15(9-18)	3	42.8	32(2-64)	5	71.4
September	22	9	40.9	29.25(10-47)	2	9.09	10(4-16)	7	31.8	29.4(1-130)	9	40.9
October	19	0	0	0	0	0	0	0	0	0	0	0
November	14	1	1	0	0	0	0	0	0	0	2	14.3
December	18	12	66.6	0	0	0	0	0	0	0	14	77.7
Total	140	61	25.8	0	9	6.4	10.4	11	7.8	27.8	65	46.4

Table 2 : Gastrophilus intestinalis infection of donkeys in relation to age of the animals.

Age of animal (years)	No. examined	No. infected	% infected	Mean no. of larvae
< 2 years	89	28	31.4	32.5
2 - < 4 years	19	17	89.5	29.5
4-6 years	13	9	69.2	25.2
> 6 years	19	9	47.3	29.3
Total	140	63	45	30.4

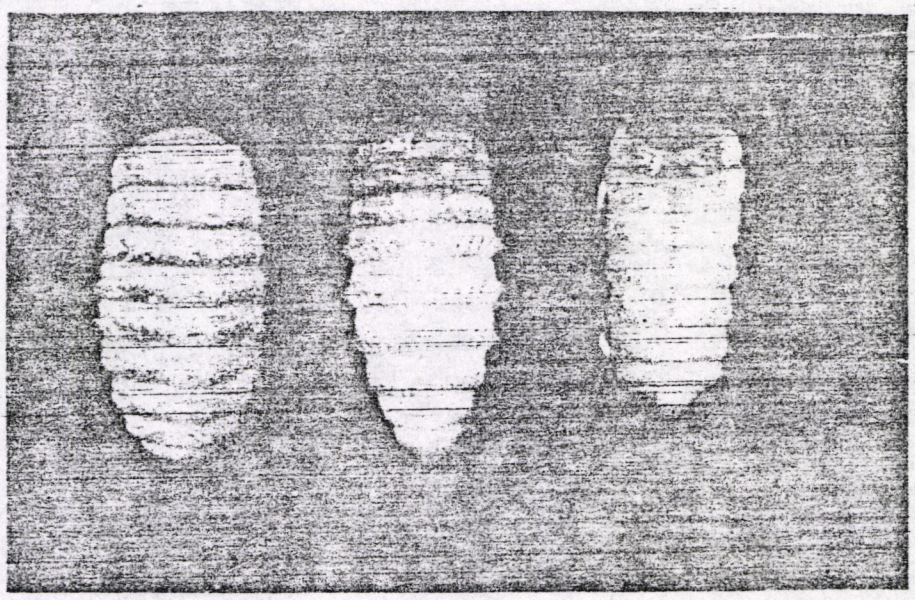

Plate 1. From left Gastrophilus pecorum, G. nasalis, G. intestinalis from the stomach of donkey.

REFERENCES

1. Schooley, N.A.; Marsland, W.P. and Fogg, T.J. (1971). Monthly distribution of Gastrophilus species in horses in the United States- Implication on treatment schedules. Vet. Med. Small Anim. Clin. 66: 592-593.
2. Weddell A. H. (1972). The pathogenicity of Gastrophilus intesinalis larvae in the stomach of the horse. Aust. Vet. J. 48: 332-335.
3. Kettle P. R. (1974). The genus Gastrophilus in the horse in New Zealand. N. Z. Vet. J. 22: 43-45.
4. Drudge J. H.; Lyons E.T.; Wyant Z. N. and Tolliver S. C. (1975).Occurrence of second and third instars of Gastrophilus intestinalis and G.nasalis in stomach of horses in Kentucky. Am. J. Vet. Res. 36: 1585-1588.
5. Panitz E. (1978). Occurrence of second and third instars of Gastrophilus intestinalis and G.nasalis in mid-Atlantic United States. Vet. Parasitol. 4: 161: 166.
6. Hatch C.; McCaughey W.J. and O'Brien J.J. (1076). The prevalence of Gastrophilus intestinalis and G.nasalis in horses in Ireland. Vet. Rec. 98: 274-276.
7. Pandy V. S.; Cuhelli H. and Elkhalfane A. (1980). Observation on the epizootiology of Gastrophilus intestinalis and G. nasalis in horses in Morocco. Vet. Parasitol. 7: 347-356.
8. Leiper J. W. G. (1957). Animal parasites and their control. Report to the government of Iraq. Rome, F. A. O....No. 610.
9. Wells R. W. and Knipling E. F. (1938). A report of some recent studies on species of Gastrophilus occurring in horses in the United States. Iowa State Coll. J. Sc. 12: 181- 203.
10. Solusby E. J. L. (1982). Helminths, Arthropods and Protozoa of Domesticated animals, 7th ed.; Baillier. Tindall, London.
11. Edwards G. T. (1982). The prevalence of Gastrophilus intestinalis in horses in Northern England and Wales. Vet. Parasitol. 11: 215: 222.

12. Ali F. H. (1990). A survey of ecto-parasites in horses in Baghdad area. M. Sc. Thesis, Baghdad University.
13. Zumpt T. F. (1965). Maysis in man and animals in old world. Butterworths, London, pp. 110-128.
14. Duncan J. (1982). Internal parasites of horses; Treatment and control. Equine Clinic (In practice). pp. 183-188.

The Iraqi J. Vet. Med. 19 & 20 , No. (2) , 1995-1996

مسح ليرقات الجنس GASTROPHILUS في الحمير

سامي رضا علي و رافع ياسين الكبيسي و رعد حربي رهيف

فرع الطفيليات، كلية الطب البيطري / جامعة بغداد

الخلاصة

جرى فحص المعدة والامعاء الدقيقة والغليظة لـ 140 حمارا للتعرف على نسبة خمجها بيرقات الذبابة Gastrophilus اظهرت الدراسة نسب الخمج 0ر45٪ ، 4ر6٪ ، 8ر7٪ ليرقات G.intestinalis و G. nasalis و G. pecorum على التوالي وقد وجدت اليرقات الثالثة لـ G. intestinalis خلال اشهر السنة عدا شهر تشرين اول حيث وجدت اعلى نسبة في شهر شباط (5ر87٪) واوطأ نسبة في شهر تشرين الثاني 1ر7٪ اما اليرقات الثالثة للنوعين G.nasalis و G. pecorum فقد وجدتا في حزيران واب وايلول وهما لاول مرة في العراق، كما اظهرت الدراسة ان نسبة الخمج تقل مع تقدم العمر ولم نلاحظ فرقا في نسبة الخمج لكلا الجنسين.