

PREVALENCE OF FASCIOLA SP. INFECTION IN DONKEYS IN BAGHDAD, IRAQ.⁺

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Abstract:

This study is concerned with the study of Fasciola sp. infection of equine. A 268 donkeys slaughtered at Al- Zawra abattoir has been examined from July 2000 till August 2001, aged 6 months - 22 years . It was found that 4.10% of donkeys were infected with Fasciola sp. Neither calcified bile ducts nor cirrhosis of liver were observed .

المستخلص:

مسح الإصابة بديدان الكبد في الحمير المذبوحة في حديقة متنزه الزوراء في بغداد للمدة من تموز 2000 ولغاية حزيران 2001 . فحصت أعضاء 268 حماراً ، تراوحت أعمارها بين ستة اشهر و 22 سنة . بلغت نسبة الإصابة ٤,١٠ % . لم يلاحظ قنوات صفراء متكلسة ولا التليف الكبدي .

Introduction :

Economically, liver flukes cause an important parasitic diseases [1]. Though Fasciola sp. is quite common in many species of mammals [2&3], information on its occurrence in equines is scanty [4]. On the basis of fecal examination it was found in nine of 20 donkeys examined in Britain [5], 63-91% of donkeys and horses in Ireland [6] and 48% of ponies in Australia [7]. It has also been reported from equines in Japan [8], France [9] . In Morocco, Pandy [4 & 10] reported the prevalence of Fasciola hepatica in two different periods , at the year 1978, was 5.4% & 5.9% in 1983. Several methods have been carried out to detect the presence of parasitic ova or worms such as, corpological, clinical and postmortem examination . The importance of these animals as a carrier and a source of infection to horses, so it is useful to study the prevalence of Fasciola among donkeys.

Materials and Methods :

During July 2000- June 2001, 268 donkeys were slaughtered , to feed the carnivores , in Al-Zawraa zoo, Baghdad, Iraq . A monthly average of twenty two donkeys were inspected . The exact origin of animals could not be ascertained , but most came from Nassyria, Wasset, Hilla and Baghdad provinces of Iraq.

Details of the age, sex of each donkey were recorded. Age of the donkeys was estimated by dentition [11] . All animals were of common local non descriptive type and of varying ages (6 months to 22 years old) and of both sexes .

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Visual examination of the abdominal cavity and digestive tract as well as , lung, liver, spleen, heart, diaphragm and kidneys, followed this by cutting , many of incisions in these organs, were performed. In addition the livers were thoroughly examined. All the flukes were collected first by incising the bile ducts and the livers parenchyma , were thinly sliced and each slice was palpated and then squeezed.

Results :

Of the 268 donkeys examined , 11(4.10%) were infected . All 42 worms collected were *Fasciola hepatica* , measuring 4.8 –3.2 by 1.3-0.7 cm. It is flattened and leaf – like along the margin, fleshy throughout the middle. At the anterior end there is a distinct, conical projection, while the posterior end is broadly rounded . Extensive branching of the intestinal ceca, of the two testes and the vitelline follicles , and the relatively short, convoluted uterus. The mean number of worms was 3.8 per donkey with a range of 5-10 , mature and immature parasites (Fig. 1) .Neither calcified bile ducts nor cirrhosis of liver parenchyma were observed . Table 1 demonstrates the prevalence rate of parasitic infection among females in our study was 6.4% and &2.5% in males . The study showed that the prevalence was highest in the age group 1- 7 years (4.6%) , whereas have not been found at the age under one year and in the age group of 13-19 years old table 2 .

We have found the microscopic type of *Sarcocystis*, was the leading parasite, with a prevalence rate of 74.54% revealed by pepsin digestion and by trichinoscopy in 60%of examined animals, whereas the macroscopic type of the parasite was not found, followed by *Echinococcus granulosus* larvae 9.32%

Strongylus sp. *Parascaris equorum* , was also found with a prevalence rate 2.9% and 2.1% respectively , which were mentioned in other reports[12 ,13 &14] .



Figure 1 : Mature *Fasciola hepatica* . isolated from infected donkeys

Table 1 Sex distribution of *Fasciola hepatica* in 268 donkeys .

Sex	No. examined	No. infected	%
Males	160	4	2.5
Females	108	7	6.4
Total	268	11	4.10

Table 2 Age distribution of *Fasciola hepatica* in 268 donkeys .

Age group (years)	No. examined	No. infected	%
< 1	3	0	0
1-7	130	6	4.6
7- 13	116	2	1.7
13-19	7	0	0
>19	12	3	25
Total	268	11	4.10

Discussion :

Horses are as suitable as cattle for liver fluke hosts [15] . [3&7] classified the cattle , horse, donkey, etc. as delayed resistance group ,this might be due to the disease is self –limiting , but may cause sever pathogenic lesions .Pandey [10] states that the low incidence of infection in donkeys can be explained only on the basis of their management grazing behavior . It is important to pay attention to concurrent infections with other pathogenic parasites, this as indicated that liver flukes may survive for many years ,possibly long as 20 years or more without causing clinical problem [16].

Many species of endoparasites were recorded in horses , mules and donkeys by Iraqi workers [17-25], but to our knowledge no detailed studies on donkeys liver flukes are available for comparison .

Al- Ani et al. [26] have showed to presence of *Fasciola* sp. in the mules in Mosul . Examination of fecal samples from 50 the horses from Mosul region revealed that the infection rate with *Fasciola* sp. was 10% [27].

In the present study, the examination of livers did not reveal infected animals calcification of bile ducts, commonly seen in cattle . Thus it appears to fall into the category of hosts in which , according to [28 &29] , the life span of *F. hepatica* is very long because of the absence of calcification of the bile ducts . However, [7] considered that the life span of *F. hepatica* in equines is short . In the absence of experimental infections these two contradictory views cannot be reconciled .

The intensity of infection was low , probably grazing behavior or type of food they feed on, natural resistance and the life span of the worms all act to limit fluke existence in donkeys [10&24].

Liver fluke were found in donkeys 1 to 7 years . Age resistance might also play a role in the rate of infection [24]. On the other hand, [30] found the adult animals suffer from higher rates of infection with these parasites .

It is generally accepted that clinical Fascioliasis in equines is rare , but in heavily contaminated areas equines which graze with ruminants can suffer sub- acute or chronic disease , and may contribute to the maintenance of the infection in the vector snails by eliminating large numbers of eggs in their feces [1,9& 31] . Thus , when a prophylactic program in ruminants is involved, equines should also be taken

in consideration .To adopt the recommendation of previous workers [4&24] suggested that the important role of donkeys in harboring parasites to other animals , since maturation of the parasites commonly takes place in donkeys without noticeable clinical manifestation.

References :

- 1.Marquardt W.C. Demaree R.S. and Grieve R.B., *Parasitology and Vector Biology* , Harcourt Academic Press, USA, 2000.
- 2.Soulsby E.J.L., *Helminths, Arthropods and Protozoa of domesticated animals*, Bailliere , Tidal, London, 1982.
3. Esteban J. Gonzalaz C. Curtalc F. Munoz- Antoli C. Valero M.A. Bargues M. D. El-Sayed M. Engels D. Savioli L. and Mascoma S., “*Hyper endemic Fascioliasis associated with Schistosomiasis in village in the Nile Della of Egypt* ” American Journal of Tropical Medicine and Hygiene, Vol. 69, No. 4, pp. 429-437, 2003.
4. Pandey V.S., “ *Observation on Fasciola hepatica in Donkeys from Morocco* ” Annals of Tropical Medicine and parasitology ,Vol.77,No. 2, pp.159-162,1983.
- 5.Pankhurst J.W., “*Liver fluke in donkeys*” Veterinary Record , Vol. 75, pp. 434, 1963.
6. Kerney A., *Fasciola hepatica* ; “ *Equine as Reservoir hosts on hill and marginal land* ”. Proceeding of the 3rd International Congress of Parasitology , Munich , pp. 511 , 1974.
- 7.Boray J. C., *Experimental Fascioliasis in Australia* , In *Advances in Parasitology*, Academic Press, London and New York, 1963.
- 8.Akahane H. Harada Y. and Oshima T., “ *Patterns of the Variation of the Common Liver Fluke (Fasciola sp.)in Japan . IV. Comparative Studies on the External Form, Size of Egg and Number of Eggs in the Uterus of Fluke in Pig and Horse*” , Japanese Journal of Parasitology , Vol. 23, pp. 207-212, 1974.
- 9.Moisant C. Jolivet G. and Pitre J. (1972) Cited by Pandey V.S., “ *Observation on Fasciola hepatica in Donkeys from Morocco* ” Annals of Tropical Medicine and parasitology ,Vol.77,No. 2, pp.159-162,1983.
- 10.Pandey V.S., “*Observation on Helminthes Parasites from Digestive Tract, Lungs and Liver of Donkeys in Morocco* ” Proceeding of IV International Congress of Parasitology , Warszawa, pp. 177, 1978.

١١. الوهاب ،رياض محمد حسن ؛ المراني ، وليد خضير و عبد الكريم محمود . *أدارة الحيوان* . مطابع مؤسسة دار الكتب ، جامعة الموصل ، وزارة التعليم العالي والبحث العلمي ، العراق . ١٩٨٠ .

12. Al-Hamad H.A., *Comparative Study of Morphological and Biological Characteristics of Echinococcus granulosus Using Protoscoleces of Hydatid Cysts Isolated from Intermediate Hosts*. M Sc. Thesis College of Veterinary Medicine ,University of Baghdad , Iraq, 2002.
١٣. رهيف، رعد حربي، العامري، عامر مرجم، عطية، آمال حسن. "انتشار طفيلي الحويصلات الصنوبرية *Sarcocystis* في حمير العراق" المجلة الطبية البيطرية العراقية، المجلد ٢٦، العدد ٢، الصفحات ٢٤-٣٠، ٢٠٠٢.
١٤. رهيف، رعد حربي، عطية، آمال حسن. "إصابة الحمير بالأكياس العنبرية *Echinococcus granulosus* (Batsch, 1786): دراسة وبائية". المجلة العراقية للعلوم البيطرية، المجلد ١٦، العدد ٢، الصفحات ٨٧-٣٩، ٢٠٠٢.
15. Akahane H. Harada Y. and Oshima T., " Patterns of the Variation of the Common Liver Fluke (*Fasciola sp.*)in Japan . III. Comparative Studies on the External Form, Size of Egg and Number of Eggs in the Uterus of Fluke in Cattle, Goat and Rabbit" Japanese Journal of Parasitology , Vol. 19, pp.619-627, 1970.
16. Taher H., "Liver Fluke Causing Dilatations of Common Bile Duct" Basra Journal of Surgery , Vol. 10 ,pp. 103-104, 2004.
17. Altaif K. I., "Anthelmintic Trial in Arab Horses with Thiabendazol and tetra-mizol " Veterinary Record , Vol. 91, pp. 282-285, 1972.
18. Zangana I. K., *Epidemiology of equine piroplasmiasis in Arabic Horses in Baghdad Area* MSC. Thesis . College of Veterinary Medicine ,University of Baghdad , Iraq, 1982.
19. Al-Janabi B.M. Rao B. V., "Check List of Helminths Parasites of Man and Animals from Iraq " Iraqi Medical Journal , Vol. 31, pp. 148-182, 1983.
20. Al-Saqur I. M. Khamas W. H. Al-Taei S. N. and Al-Garbawi M., "Identification and Pathology of *Strongylus* Species in Naturally infected mules " Iraqi Journal of Veterinary Medicine , Vol. 11,pp. 1-9, 1987.
21. Yakoob A. Y. Issa W. H. and Altaif K.I., "Prevalence of Gastro- intestinal Parasites of Horses in Baghdad Area " The Iraqi Journal of Veterinary Medicine , Vol. 12, pp.221-230, 1988 .
22. Al-Saqur I.M. and Habashs F.K., " Prevalence of *Parascaris equorum* in Equine " Biology Research ,Vol. 5,No. 5, pp. 7-11, 1989 .
23. Al-Falahe M. K. *Study on the Epidemiology of Gastro- intestinal Nematodes in Natural Infected Equine in Baghdad Province* . M Sc. Thesis College of Veterinary Medicine ,University of Baghdad , Iraq, 1992.
24. Ali S.R. Rahif R. H. and Al-Kubaisee R.Y., " Prevalence of Internal Parasites among Equine in Central Iraq "The Veterinarian , Vol. 2, No. 1, pp. 35-42, 1992.

- 25.Daoud M.S. and Al –Alousi T. I., “ *A Note on Some Parasites in Donkeys in Mosul* ” Iraqi Journal of Veterinary Sciences, Vol. 8, No. 1, pp.169-170, 1995.
- 26.Al-Ani A. J. Fatohy F. A. M. Saleem A.N. “*Gastro-intestinal Parasites and their Clinical Effect on Mules in Mosul ,Iraq* ”Iraqi Journal of Veterinary Sciences , Vol. 5, pp. 19-30, 1992.
- 27.Al-Alousi T.I. Arslan S.H. and Zangana I.K., “*Study of Some Parasitic Infections in Horses in Mosul Region ,Iraq* ” Iraqi Journal of Veterinary Sciences, Vol. 7, No.2, 1994.
- 28.Anderson J.R., Trematode Infection.In :*Muistext Book of Pathology*. Macsween R.N.M. and Whaley R., Oxford University press, New York, 1997.
29. الدليمي ، جواد كاظم علي. *دراسة وبائية ومناعية لطفيلى Fasciola gigantica بين الأبقار*
محافظة بابل ، أطروحة دكتوراه ، كلية الطب البيطري ، جامعة بغداد ، العراق ، ٢٠٠٥.
- 30.Lyons E.T. Tolliver S.C. Drudge J.H. Swerezek T.W. and Crowe M.W., “ *Parasites in Kentucky Thoroughbreds at Necropsy :Emphasis on Stomach Worms and Tapeworms* ”American Journal of Veterinary Medicine ,Vol.44, pp.839- 844, 1983.
- 31.Farag H.F., “*Human Fascioliasis in Some Countries of the Eastern Mediterranean Region* ” Journal Egyptian Sciences of Parasitology ,Vol.4, No.1,pp.156-160, 1998.