Vet.Med.J.,Giza. Vol.43,No.2.(1994):231-239.

INCIDENCE OF SOME ZOONOTIC AGENTS AND TUBERCULOSIS IN SLAUGHTERED BUFFALOES (BUBALUS BUBALIS)

BY

N.. K. MANSOUR

SUMMARY

A total of 6000 buffaloes (Bubalus bubalis) slaughtered for meat production at Cairo abattoir were examined at post mortem during 1991 - 1992 for the presence of Cysticercus bovis, sarcosporidia, hydatid cysts, liver flukes and tuberculosis. The incidence rate was 0.32%, 0.88%, 0.60%, 8.44% and 4.96% for those affections respectivley. Fascioliasis constituted nearly 80% of the parasitic affections. The lungs showed tuberculous nodules in 70.41% of the cases. Suggestive measures for control of such affections were mentioned.

INTRODUCTION

Water buffalo (Bubalus bubalis) is one of the main important sources furnishing meat for human consumption (Gracey, 1986). A large number of such animals are subjected for slaughter in Asian and African countries (Ronohardjo et al., 1986; Joshi et al., 1988; Latif and El-Azawi, 1988, Ozer, 1988; Pal and Bagi 1989; and Khan et al., 1990).

Buffaloes meat production came to the second rank after beef production, where it constitutes about 44% of the total meat production in Egypt (G. O. V. S. 1986).

One of the most important cyclozoonotic diseases transmited to man indirectly through slaughtered animals is, Hydatidosis caused by the metacestod parasite Echinococcus granulosus or E multilocularis (Soulsby; 1982).

Hydatidosis is considered as one of the enden diseases among water buffaloes (Bubalus bubal is most countries. Incidence of hydatidosis amo slaughtered buffaloes was 75% in Sofia (Krau 1934), 16% in Egypt, (El-Kordy, 1946), 28.6% India, (Singh et al., 1988), 19% in Pakistan (K et al., 1990).

The predilection sites for hydatid cyst were l liver as well as other organs as spleen, kid heart, brain (Singh et al., 1988 and Khan 1990). The hydatid cysts recovered from af buffaloe's organs were mostly fertile whe fertility rate ranged from 90 to 100% (Gi Rao, 1967, and Khan et al., 1990).

Sarcosporidia in slaughtered animals microscopic as Sarcocystis tenella (in sh blanchardi, S. mirsuta and S. cruzi (in ca miescherians (in pigs), or macroscopic sar (S. fusiformis) in buffaloes (Gracey, 1986 et al., 1989).

Examination of buffaloes for the pre sarcocytes is applied in many countries, involuntary muscles e. g. oesophagus, d heart as well as tongue are incised and by the naked eye or microscopically.

The incidence of sarcocysts among s

buffaloes, figured up to 26.2% (macroscopically) and 95.1% (microscopically) in Turkey (Ozer, 1988) and 10.3% in Iraq (Latif and El-Azawi, 1988). All investigations applied on natural or experimentally infested buffaloes proved that the recovered strain was Sarcocystis fusiformis (Cohosal et al., 1987, and Dubey et al., 1989).

Liver flukes parasitize the bile ducts and hepatic tissue of mammals, however man acquires infection indirectly through swallowing of encysted metacercaria on vegetables or contaminated water. Fasciola gigantica causes severe losses in cattle and buffaloes in Africa, Indonesia, Nepal, India, Japan (Soulsby, 1982; Gracey, 1986; Gupta and Paul, 1987; Chaudhri et al., 1988).

In iraq, Mahdi and El-Baldawi (1987). Stated that the incidence rate was 4.8% of Fasciola gigantica among slaughtered buffaloes.

Human infestation with Taenia saginata has been attributed to the consumption of improperly cooked beef infested with C. bovis. It is generally accepted that man is not a susceptible host for the metacestode of T. saginata (Soulsby, 1982,; and Gracey, 1986).

Tuberculosis is a bacterial zoonotic disease, occurs mostly among ruminants primarly in respiratory tract, while secondary infection occurs in alimentary tract (Gracey 1986).

Due to the scarcity of information about the incidence of such cyclozoonotic parasitic diseases (fascioliasis, sarcosporidiosis, hydatidosis, cysticercosis) as wll as tuberculosis among slaughtered buffaloes in Egypt, this study had been planned to scure and to fulfil such information.

MATERIAL AND METHODS

A total number of 6000 Egyptian native breeds of water buffaloes (Bubalus bubalis) subjected for slaughtering at Cairo abattoir during 1991-1992 were inspected for the presence of parasitic diseases that have zoonotic importance as well as for tuberculosis. The significance of age of slaughtered animals upon the incidence of different affections had been studied.

Post mortem inspection of the carcasses of slaughtend buffaloes was applied according to the method recommended by Gracey (1986), for post mortem examination of beef carcases with special reference of beef measels, sarcosporidia, examination of internal organs for the presence of hydatid cysts, fascioliasis and tuberculosis.

RESULTS AND DISCUSSION

It is proved form the results achieved in table (1) that the frequency of parasitic diseases encountered among slaughtered buffaloes was 371 out of 6000 examined carcases with an incidence rate of (6.18%). Distribution of parasities among old buffaloes is more than that encountered in younger ones (10.24% and 3.28% respectively). The most common parasites encountered in old and buffalo calves were the liver flukes; F. gigantica (8.44% and 2.43% respectively). It is also observed from the same table that the frequency of other parasites as sarcocystis (Sarcocystis Fusiformis), hydatid cysts, Cysticertus bovis were 0.88%, 0.60% and 0.32% respectively among old buffaloes, while in buffalo calves were 0.20%, 0.25%, 0.40% respectively and collectively in both were 0.48%, 0.40% and 0.37% respectively.

Table (2) shows frequency of parasitic affections, fasciola constituted 79.78% while sarcocystis, hydatid cyst and Cysticercus bovis were 7.82%, 6.47% and 5.93% respectively from the recovered

Table (1): Frequency of zoonotic parasites and tuberculosis in 6000 slaughtered buffaloes at Cairo abattoir.

	Old		Young		Total	
	No.*	%**	No.*.	%**	No.*	%**
Parasitosis						
Fasciolia	211	8.44	85	2.43	296	4.93
Sarcocysts						
Oesophagus	18	0.72	6	0.17	24	0.40
Tongue	4	0.16	1	0.03	5	0.08
Total	22	0.88	7	0.20	29	0.48
Hydatid cysts						
Lung	10	0.40	5	0.14	15	0.25
Liver	5	0.20	4	0.11	9	0.15
Total	15	0.60	9	0.25	24	0.40
Cysticercus bovis						
Masseter muscle	2	0.08	4	0.11	6	0.10
Heart	6	0.24	10	0.29	16	0.27
Total	8	0.32	14	0.40	22	0.37
Total of parasitic cases	256	10.24	115	3.28	371	6.18
Tuberculosis,						
Lung	83	3.32	36	1.03	119	1.98
Liver	19	0.76	3	0.09	22	0.37
Head	11	0.44	4	0.11	15	0.25
Spleen	1	0.04	-	-	1	0.02
Generalized	10	0.40	2	0.06	12	0.20
Total	124	4.96	45	1.29	169	2.82
Total ***	380	15.20	160	4.57	540	9.00
Total inspected	2500		3500		6000	

* No. of the affected carcases

** % percentage of the diseased cases to the total inspected carcases

*** Total of the affected cases.

Table (2): Frequency of zoonotic parasites in 6000 slaughtered buffaloes

Parasites	Old		Young		Total	
	No.	%*	No.	%	No.	%
Fasciola	211	82.42	85	73.91	296	79.78
Sarcocysts						
Osophagus	18	7.03	6	5.22	24	6.47
Tongue	4	1.56	1	0.87	5	1.35
Total	22	8.59	7	6.09	29	7.82
Hydatid cysts						
Lung	10	3.91	5	4.35	15	4.04
Liver	5	1.95	4	3.48	9	2.43
Total	15	5.86	9	7.83	24	6.47
Cysticercus bovis						
Masseter muscle	2	0.78	4	3.47	6	1.62
Heart	6	2.34	10	8.70	16	4.31
Total	8	3.13	14	12.17	22	5.93
Total	256	10.24**	115	3.28	371	6.18
Total inspected	2500		3500		6000	

* % percentage of each affection to the total diseased cases

** % of total diseased cases to the total inspected.

parasites.

High frequency of fascioliasis (F. gigantica) among slaughtered buffaloes could be attributed to grazing on green feeds, which are mostly contaminated with the encysted metacercaria (the infective stage) originated from the specialized snails (Lymnea species) as well as most of Egyptian farmers leave the animals drink from channels, which contain large numbers of different species of snails. Similar reasons were also stated by Gupta and Paul (1987) in India. It is also obvious from the achieved results in tables (1 & 2) that fascioliasis is more frequent in aged slaughtered buffaloes than in buffalo calves. This may be due to the repeated impose to contaminated sources through successive seasons.

Fascioliasis in buffaloes leads mostly to chronic condition, causing liver cirrhosis, pipness of bile ducts, such affections render the liver unfit for consumption, furthermore this may lead to

Table (3): Distribution of tuberculosis in 6000 slaughtered buffaloes at Cairo abattoir

Tuberculosis	Old buffaloes		Young buffaloes		Total	
	No.	%	No.	%	No.	%
Lung	83	66.94	36	80.00	119	70.41
Liver	19	15.32	3	6.67	22	13.02
Head	11	8.87	4	8.89	15	8.88
Spleen	1	0.81	-	-	1	0.59
Generalized *	10	8.06	2	4.44	12	7.10
Total	124		45		169	
Total inspected	2500	4.96 **	3500	1.29 **	6000	2.82 **

* In the form of wide spread affection of carcase lymph nodes.

** % of total inspected.

Table (4): Incidence of different affections in relation to organs affected

	Old		Young		Total	
	No.	%	No.	%	No.	%
Head						
Tuberculosis	11	64.71	4	44.44	15	57.69
Sarcocysts (tongue)	4	23.53	1	11.11	5	19.23
C. bovis	2	11.76	4	44.44	6	23.08
Total	17	(4.47)	9	(5.63)	26	(4.81)
Lung						
Tuberculosis	83	89.25	36	87.80	119	88.81
Hydatid cysts	10	10.75	5	12.80	15	11.19
Total	93	(24.47)	41	(25.63)	134	(24.81)
Liver						
Fascioliasis	211	89.79	85	92.39	296	90.52
Tuberculosis	19	8.09	3	3.26	22	6.73
Hydatid cyst	5	2.13	4	4.35	9	2.75
Total	235	(61.84)	92	(57.50)	327	(60.56)
Miscellineous						
Heart (C.bovis)	6	17.14	10	55.56	16	30.19
Oesophagus (sarc.)	18	51.43	6	33.33	24	45.28
Spleen (T.B.)	1	2.86	-	-	1	1.89
Genalized T.B. *	10	28.57	2	11.11	12	22.64
Total	35	(9.21)	18	(11.25)	53	(9.81)
Total	380	(70.37)	160	(29.63)	540	

N.B: Percentages between 2 brackets means Frequency from total number of affected organs (540)

* In the form of wide spread affections of carcose lymph nodes.

obstructive jaundice. According to the aformentioned data the losses constituted 687040 Egyptian pounds due to condemnation of affected livers annually). An interested point is that, incidence of salmonellae carriers were four times greater in flukes infested cattle than in cattle that were not affected (Gracey, 1986; Urquhart et al., 1991).

Concerning sarcosporidia, they came on the 2nd position of the recovered parasites (Table, 1&2). The frequency was low (0.48%) among slaughtered buffaloes, this could be explained as the simple technique applied at abattoir using different incisions in tongue as well as palpation of oesophageal muscles . An interested point is that all the discovered sarcocysts were macroscopic spindle shape cysts.

Sarcocystis fusiformis (Ozer, 1988, Xiao et al., 1988). Oesophageal examination macroscopically revealed an incidence rate of 26.2%, however the microscopical examination of diaphragmatic muscles of the same number of buffaloes under test resulted in incidence rate of 95.1% (Ozer, 1988). From this standpoint, the routine post-mortem examination of oesophagus for the presence of sarcocysts does not reflect the real picture of incidence, therefore another more accurate techniques is to be aplied as microscopic or digestion techniques (Yassien, 1984; Knapen et al., 1987, Ozer, 1988).

The incidence of unilocular hydatid cysts are recorded in tables (1 & 2), which are low among slaughtered buffaloes (0.4%). Nearly similar results were obtained by Sedik et al., 1976 and Mansour, 1979, the latter author had not found any hydatid cyst among 1500 slaughtered buffaloes. Low occurrence may be attributed to the restricted movement and the close breeding system of the Egyptian buffaloes, giving no chance for acquiring infection from carnivores specially stray dogs. On the other hand, as in India and Pakistan the incidence of hydatidosis among slaughtered buffaloes is high due to the breeding system and the close relation between carnivores and buffaloes (Singh et al., 1988; Khan et al., 1990).

Lungs and livers were the predilecation sites for hydatid cysts (Table 4). The achieved results proved that buffaloes play no role in spreading of echinococcosis but camels (Mansour, 1979). On the other hand buffaloes play a great role in the dissemination of hydatidosis in Pakistan, as fertility rate of recovered hydatid cysts reached 100% (Khan et al., 1990).

Cysticercosis detected in buffaloes at low percentage 0.37% (Table 1 & 2). On the other hand cattle cysticercosis (C. bovis) occurs in many countries, where human sanitation is poorly developed and due to lack of controlling the intermediate host as in many parts of Africa, Asia and Latin Amerca (Urquhart et al., 1991). Although, in France the incidence rate among slaughtered cattle is low (1%), there were 30000 human cases recorded yearly (Bonnel., 1989). In Egypt, restricted movement of buffaloes leads to low occurrence of cysticercosis.

Concerning tuberculosis among slaughtered buffaloes, the incidence rate was 2.82% (Table 1), the rate was higher among old buffaloe, but lower in youngs (4.96% and 1.29% respectively). The primary infection seems to be mostly in lungs (1.98%),. These results were in agreement with that obtained by Farrag et al., 1953; El-Mossalami et al., 1970, Gracey, 1986, Mansour, 1992). These lesions detected among buffaloes were mostly chronic isolated nodules in lungs (left bronchial lymph nodes), and lymph nodes of head and liver. The most encountered form of generalized tubreculosis was the wide spread affections of carcase lymph nodes (Table 3).

It is of interest to mention that the tuberculous

lesions in the liver and lungs, constituted more than 85% of total affections, and that the incidence of tuberculosis among aged buffaloes was higher than in younger animals (Table 4).

The revealed results proved that the most common parasitic affections were fascioliasis, such problem, is complicated not only due to economic losses in slaughtered animals but also due to the intermediate host (different types of Lymnaea snails). The control of fascioliasis may be conducted by two ways, reduction of population of snails and by using anthelmintic drugs (Urquhart et al., 1992), however in Egypt, the problem is more complicated due to the close relation between the animals and Nile water, which is used mainly for cultivation . From this point eductional programmes should be conducted to the farmers and the breeders. Other parasitic affections as sarcosporidiosis in slaughtered buffaloes, the attention should be paid to another techniques as microscopic or digestion methods for the accuracy of the results. Buffaloes play low or practically no role in spreading of echinococcosis in Egypt, however camels are the most important resevoir as mentioned by Mansour (1979). Suggestive measures for control of hydatidosis and cysticercosis are thorough meat inspection and hygienic disposal of condemned meat and affals. Prevention of dogs from entering the abattoirs, destruction of stray dogs, and hygienic disposal of human excreta seem to be a necessity. Attention should be paid to slaughtered buffaloes as an intermediate host for Cysticercus bovis.

REFERENCES

Bonel, A. (1989): Bovine cysticercosis in France. GDS Informations Sanitaires No. 97, 43.

Chaudhri, S. S.; Mandokhot, V. M.; Gupta, R. P.; and C. L., Yadav (1988): Haematological and biochemical observations in buffaloes infected with Fasciola gigantica. Indian Vet. J. 65, 23.

Chosal, S. B.; Joshi, S. C. and H. L. Shah (1987): Development of sarcocysts of Sarcocystis fusiformis in the water buffaloes (Bubalus bubalis) experimentlly infected with sarcocysts from cats. Indian J. Ani. Sci. 57, 413.

Deka, D. K.; Borkakoty, M. R. and B. C. Lakhar (1985): Cysticercosis in domestic animals in north eastern region of india. Indian J. of Para. 9 83.

Dubey, J. P., Soeer, C. A. and H. L. Shah (1989): Ultrastructure of sarcocysts from water bufalo in india. Vet. Para. 34, 149.

El-Kordy, M. I. (1946): On incidence of hydatid disease in domestic animals in Egypt. J. R. Egypt.Med. Ass. 29, 265.

El-Mossalami, E., M. Siam and M. El-Sergany (1970): Studies on tuberculosis like lesions in slaughtered camel. Zbl. Vet.., Med., B. 11, 147.

Farrag, H.; A. El-Afifi and R. Zaki (1953): Incidence and typing of tuberculosis in camels in Egypt. Vet. Med. 1, 10.

Gill, H. S. and B. V. Rao (1967): On the biology and morophology of Echinococcus granulosus (Batsch, 1786) of buffalodog-origin. Para. 57, 695.

G. O. V. S. "General Organization for veterinary Services. Egypt" (1986): Official Records.

Gracey, J. (1986): Meat Hygiene. Bailliere Tindall, London 8th ed.

Gupta, R. P. and J. C. Paul (1987): An unusual outbreak of fascioliasis (F. gigantica) on a farm. Indian J. of animal research. 21, 41-42.

Imari, A. J. (1962): Pulmonary hydatid disease in Iraq. Amer. J. Trop. and Hygiene 11, 481.

Joshi, H.; N. Kondajah and V. Laksman (1988): Evaluation of buffalo carcasses for conformation, bruises, contamination and cuts. Buffalo Bulletin 7, 79-91.

Khan, S. A.; I. Hussain, M. Iobi and A. Majeed (1990). The incidence of hydatidosis in buffaloes slaughtered at Lahore abattoirs. Pakistan Vet. J. 10, 34-35.

Knapen, F. Van; D. Bauwman and E. Greve (1987): Survey of the occurrence of Sarcocystis species in cattle in the Netherlands, using various methods for detection. Tijdschrift Voor Diergeneeskunde 112, 1095-1100.

Krause, C. (1934): Uber den Alveolar Echinokokkus der

Lunge bei Rindern und Buffeln. Berliner Arztl. Wochschr. 50, 207.

Latif, B. M. F. and A. M. El-Azawi (1988): Prevalence of Sarcocystis infection in buffaloes (Bubalus bubalis) in Iraq. J. of Agri. and Water Resources Res. Anim. Produc. 7, 67-73.

Mahdi, N. K. and A. K. Al-Baldawi (1987): Hepatic fascioliasis in the abattoir in Basrah Annals of Tropical Medicine and Parasitology 81, 377-379.

Mansour, N. K. (1979): Hydatidosis among food animals slaughtered at Cairo abattoir, M. V. Sc. Thesis, Cairo Univ.

Mansour, N. K. (1992): Diseases of camels slaughtered for meat production in Egypt. Fleischwirtschaft, 72. 1276-1277.

Ozer, E. (1988): Sarcocystis species and incidence in cattle and buffaloes slaughtered at Elazig abattoir. Doga. Veterinerlik ve Hayvancilike 12, 130-139.

Pal, M. and A. S. Bagi (1989): Fungi isolated from lymph nodes of buffaloes. Mycoes 32, 578-580.

Pawlowski, Z. and M. G. Schultz (1972): Taeniasis and cysticercosis (Taenia saginata). Adv. Para. 10, 269-343.

Soulsby, E. (1982): Helminths, Arthropodes and Protozoa of domesticated animals. Bailliere, Tindall.

Urquhart, G. M.; A. Amour: J. L. Duncan, A. M. Dunn and F. W. Jennigs (1991): Veterinary Parsitology. Longman Scientific and Technical.

Xiao, B. N.; X. M. Zhang: Y. S. Zhang and Z. F. Gong (1988): A survey of sarcosporidiosis in domestic animals. chinese J. of Vet. Med. 14, 12-14.

Yassien, M. A. (1984): Muscular parasites in slaughtered camels Ph. D. Thesis Cairo Unviersity.

Ronohardjo P.; A. Wilson; S. Partoutomo and R. Hirst (1986): Some aspects of epidemiology and economics of important diseases of large ruminants in indonesia. Proceeding of the 4th International symposium of Veterinary Epidemiology and Economics, Singapore, 18-22. November (1986), 303-305.

Sachs, R. (1969): Untersuchungen zur Artbestimmung und Differenzierung der Muskelfinnen ostafrikanischer Wildtiere. Z. Tropenmed. Parasit. 20, 39-50.

Sedik, M. F.; S. Roushdy; M. Zidan and M. Abd-Elsalam (1976): Incidence of Echinococcosis among slaughtered animals at Cairo abattoir. Assiut Vet. J. 4, 173.

Singh, B. P.; D. V. Schrma and V. K. Srivastva (1988): Prevalence of hydatid cysts in buffaloes in India and report of severe liver infection. J. Helmin., 62, 124-126.