European Journal of Applied Sciences 7 (6): 250-254, 2015
ISSN 2079-2077

DOI: 10.5829/idosi.ejas.2015.7.6.101150

An Abattoir Study on the Prevalence of Fasciolosis in Cattle Slaughtered at Ubakala Slaughter House, Abia State, Nigeria

[1]O.E. Akoji, [1]U. Akpabio and [2]S.S. Ngulukun

[1]Department of Veterinary Public Health and Preventive Medicine, College of Veterinary Medicine, Michael Okpara University of Agriculture, Umudike, Nigeria
[2]Bacterial Research Laboratory, NVRI Vom, Nigeria

Abstract: This study determined the prevalence of bovine fasciolosis at Ubakala slaughter house, Abia State, Nigeria. A total of 6,505 cattle were slaughtered during the study period with an average of 1,626 cattle per month. Over the four month period 2,711 (41.7%) of slaughtered cattle were infected with bovine fasciolosis. The prevalence of fasciolosis in cows was 36.9%, while it was 43.9% in bulls. The difference of *Fasciola gigantica* prevalence in relation to the sex was statistically significant ($P<0.005$). There was also increased prevalence of bovine fasciolosis as rainy season progressed due to the abundance of intermediate host and survival of viable encysted metacercaria for infection during grazing. The study advocated that training should be organised for farmers with the need to educate them on the economic significance and control methods of this disease.

Key words: Bovine · Fasciolosis · Ubakala · Slaughter House · Abia

INTRODUCTION

Fasciolosis is an important parasitic snail borne disease, responsible for significant public health problems and substantial economic losses to the livestock industry. Fasciolosis gained attention not only due to its prevalence and economic significance to animal stock in all continents [1, 2] but also due to its zoonotic importance. Two species, most implicated as the aetiological agents, are *Fasciola hepatica* that is predominant in temperate zones and *Fasciola gigantica* found in the tropics and endemic in Africa [3-5]. The immature form of the parasite migrates in the hepatic parenchyma and develops in the bile ducts to adult. Recently, losses in terms of reduction in milk and meat production, condemnation of liver, loss of draught power, reproductive failure and mortality were estimated at 3.2 billion dollars per annum and it is now an emerging zoonosis; with 2.4 million people infected and 180 million at risk [6, 7]. The economic losses due to Fasciolosis are caused by mortality, morbidity, reduced growth rate, condemnation of liver, increased susceptibility to secondary infections and the expense of control measures [8]. *Fasciola* spp. has an indirect life cycle involving domestic and wild herbivorous mammals and humans as definitive hosts and freshwater gastropods of the family *Lymnaeidae* as intermediate hosts [9].

The aim of the study was to determine the prevalence of fasciolosis in cattle slaughtered at Ubakala slaughter house in Umuahia South L.G.A, Abia State.

MATERIALS AND METHODS

The Study Area: Ubakala slaughter house selected for this study is located in Ubakala, Umuahia South Local Government Area of Abia State, Nigeria. It has about 13 autonomous communities; an area of 140km^2 and a population of about 138,570 as at 2006 census and lies on longitude 7° 24 E and latitude 5° 10^{1}N on the geological map of Nigeria. The slaughter house is owned by the Abia State Government and managed by the State Ministry of Agriculture and Natural Resources.

Data Collection: Meat inspection and recording of all cases of bovine fasciolosis for a period of four months (April - July 2015) was done. Post-mortem examination

Corresponding Author: Uduak akpabio, Department of Veterinary Public Health and Preventive Medicine, College of Veterinary Medicine, Nigeria.

was carried out by visual inspection, palpation and incision. The breeds of cattle inspected include White Fulani, Red Bororo, SokotoGudali, N'Dama, Keteku and Muturu.

Data Analysis: The incidence of fasciolosis in cattle examined during the abattoir survey between April - July 2015 was determined as well as sex differences and statistically tested using Chi-square test at 95% level of significance and value of P< 0.05 were considered significant [10].

RESULTS

A total of 6,505 cattle were slaughtered during the study period with an average of 1,626 cattle per month. During the same period, a total of 2,191 (33.7%) cows and 4,314 (66.3%) bulls were slaughtered with averages of 547 cows and 1,078 bulls per month, respectively. The abattoir survey showed that a total of 2,711 (41.7%) of slaughtered cattle were infected with bovine fasciolosis in which 818 (12.6%) of slaughtered cows and 1,893(29.1%) of slaughtered bulls were infected with bovine fasciolosis (Table 1). Figure 1 is liver infested with Fasciola gigantica.

The prevalence of fasciolosis during the period of study showed that cows had a lower infection rate 818 (36.9%) than bulls 1,893 (43.9%). There was also increased prevalence of bovine fasciolosis as rainy season progressed due to the abundance of intermediate host and survival of viable encysted metacercaria for infection during grazing.

The difference of *Fasciola gigantica* prevalence in relation to the sex was statistically significant (P<0.05).

DISCUSSION

This study was designed to determine the prevalence of bovine fasciolosis. The results obtained in this study, were indication that fasciolosis existed in the study area. It revealed 41.5% prevalence of bovine fasciolosis based on post mortem examination. The prevalence of 41.5.% in this study was lower than the reports of Mzembe and Chaudhari [11] in Malawi (67%), Asanji and Williams [12] in Sierra leone (82.5%), Pandey and Ahmadu [13] in Zambia (46.7%), Kuthukar *et al*. [14] in Kenya (56%), Ulayi *et al*. [15] and Olusegun-Joseph *et al*. [16] in Zaria (62.5%), Northern Nigeria, Ghavami *et al*. [17] in Northwest Iran (82.5%), Njoku- Tony [18] in Imo State (45%) Nigeria, Oryan *et al*. [19] in Northeast Iran (48.3%), Pfukenyi and Mukarafirwa [20] in Zimbabwe (74%), Gboeloh [21] in Port-Harcourt, Rivers State, Nigeria (58%) and Chanie and Bengashaw [5] in Northeast Ethiopia (65%). The later indicated that the disease was not apparent to farmers but was endemic to Africa and Asia and that prevalence and severity of disease were evident in various geographical regions depending on local

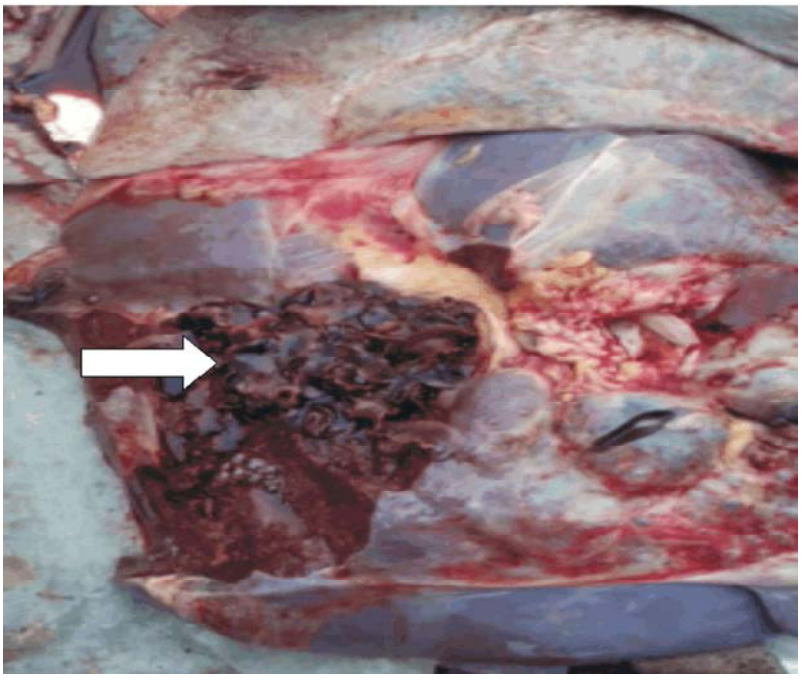

Fig. 1: Liver with arrow showing infestation with *Fasciola gigantica*

Table 1: Prevalence of bovine fasciolosis in relation to sex of the animals slaughtered at ubakala abattoir in Umuahia Abia State

Duration in Weeks	Total Number of Animals Slaughtered	Total Number of Females Slaughered	Total Number of Males Slaughtered	Number of Male Fasciola Cases	Number of Female Fasciola Case	Prevalence of Fasciolosis in Males (%)	Prevalence of Fasciolosis in Females (%)
1	364	154	210	89	49	42.4	31.8
2	343	140	203	61	58	30.0	41.4
3	337	109	228	36	38	15.8	34.9
4	349	121	228	56	22	24.6	18.2
5	370	129	241	66	55	27.4	42.6
6	374	132	242	82	56	33.9	42.4
7	355	121	234	83	57	35.5	47.1
8	369	128	241	112	58	46.5	45.3
9	390	121	269	129	69	48.0	57.0
10	413	160	253	139	37	55.0	23.1
11	394	131	263	137	21	52.1	16.0
12	356	99	257	136	22	52.9	22.2
13	340	78	262	146	33	55.7	42.3
14	387	125	262	117	37	44.7	29.6
15	412	124	288	150	38	52.1	30.6
16	385	132	253	130	73	51.4	55.3
17	369	119	250	146	52	58.4	43.7
18	198	68	130	78	33	60.0	48.5
Total	8395	2191	4314	1893	808	43.6	37.3

climatic conditions, availability of permanent water (Marshy areas) and management systems where biotypes suitable for the development of *Lymnaed* snail intermediate hosts.

The prevalence of the disease in cows and bulls was recorded as 36.9% and 43.9%, respectively. There was significant difference ($p < 0.05$) between the two sexes indicating that sex seemed to have effect on the prevalence of the disease. This was in agreement with Hazzaz *et al.* [22] who reported that the prevalence of *Fascioliasis* was higher in male cattle than in females. Therefore, the high infection rate recorded in male cattle could be attributed to the fact that the males are often immunocompromised because of their continuous exposure to *Fasciola* infections and other disease entities which usually arises from grazing on pastures contaminated by infective metercercariae, while the females are left for milk production as well as for reproduction in the ranch, prompting the herdsmen to feed them adequately with uncontaminated food and water. The few ones likely to be infected are usually those that are no longer productive, because they are used for beef production and as such, much care and attention may not be given to them. Another factor responsible for the high prevalence rate in males might be the fact that the males are usually taken around to graze and feed, thereby exposing them to infective stages of the parasite. Based on sex, our findings also contradicted the report of Hossain *et al*. [7] that females were more affected than males due to change in physiological conditions during lactation and/ or lack of proper nutrition or long time exposure of animals to disease entity.

CONCLUSION

In conclusion our study reports that *Fasciola gigantica* infection is a common infection of cattle slaughtered in ubakala slaughter house with more cases in the males due to the abundance of intermediate host *lymnae* spp. The public is at risk because of its zoonotic importance. Therefore fascioliasis is of great economic importance in Nigeria due to increased production losses, reduced meat production and high cost of treatment. Results from this study will enable for adequate planning on the treatment, management, prevention and control of bovine fascioliasis.

Recommendations: Based on the aforementioned conclusion the following recommendations are hence necessitated:

- Both bulls and cows should be given equal treatment by keeping them in a ranch and feeding them with clean feeding troughs. In a situation where the above cannot be practiced, infected animals should be isolated and treated immediately with appropriate drugs, to prevent parasitic invasion and subsequent spread of the infection to other cattle.

- Combination of effective chemotherapy and vector control should be considered in the prevention of Fasciolosis infection.
- Training should be organised for farmers with the need to educate them on the economic significance and control methods of this disease.
- Abattoir workers should be properly sensitised on the zoonotic implication of fasciolosis. Hence provision of sanitary measures, compensation of butchers and meat traders (whose liver are condemned) should be upheld.
- Detailed studies should be conducted on the epidemiology of the disease in order to expand and implement disease investigation and control strategy.
- Improving of the veterinary service infrastructure in prevalence area and standard regulation and functional meat inspection policies should be adopted for organ and carcass approval/rejection.

ACKNOWLEDGMENT

The staff of Abia State Ministry Of Agriculture and Natural Resources attached to Ubakala Abattoir.

REFERENCES

1. Mungube, E.O., S.M. Bauni, B.M. Tenhagen, L.W. Wamae, J.M. Nginyi and J.M. Mugambi, 2006. The Prevalence and Economic Significance of Fasciolagigantica and Stilesia hepatica in Slaughtered Animals in the Semi-arid Coastal Kenya. Tropical Animal Health and Production, 38: 475-483
2. Schweizer, G., U. Braun, P. Deplazes and P.R. Torgerson, 2005. Estimating the financial losses due to bovine fasciolosis in Switzerland. Vet. Rec., 157: 188-193.
3. Shah-Fischer, M. and R. Ralph- Say, 1989. Manual of Tropical Veterinary Parasitology. CAB International, The Technical Centre for Agricultural and Rural Cooperation CTA, Wallingford, Oxon OXIO 8DE, UK. 1st ed., pp: 63-74.
4. FAO, 2009. Food and Agriculture Organisation of United Nations. Livestock Sector Brief, Ethiopia. Livestock Information and Sector Analysis and Policy Branch, FAO, Rome, Italy, pp: 15-16.
5. Chanie, M. and S. Bengashaw, 2012. Assessment of the Economic Impact and Prevalence of Ovine Fasciolosis in MenzLaloMidir District, Northeast Ethiopia. Vet. World, 5(5): 261-264.
6. Henok, M. and A. Mekonnen, 2011. Study on the Prevalence and Risk Factors of Fasciolosis in Small Ruminants in and Around Hirma Town, Ethiopia. Global Veterinaria, 7: 497-501.
7. Hossain, M.M., S. Paul, M.M. Rahman, F.M.A. Hossain, M.T. Hossain and M.R. Islam, 2011. Prevalence and Economic Significance of CaprineFasciolosis at Sylhet District of Bangladesh. Pak., Vet. J., 3(12): 113-116.
8. Malone, J.B., R. Gommes, J. Hansen, J.M. Yilma, J. Slingenberg, F. Snijders, O.F. Nachet and E.A. Ataman, 1998. GeogFasciola hepatica and F. gigantica inEast Africa geographic Information System on the potential distribution and abundance of based on food and agriculture organization databases, Veterinary Parasitology, 78: 87-101.
9. Issia, L., S. Pietrokovsky, J. Sousa-Figueiredo, J.R. Stothard and C. Wisnivesky-Colli, 2009. Fasciola hepatica infections in livestock flock, guanacos and coypus in two wildlife reserves in Argentina. Vet Parasitol, 165(3-4): 341-344.
10. Bamgboye, E.A., 2006. A Companion of Medical Statistics. Ibipress and Publishing Co., Ibadan.
11. Mzembe, S.A.T. and M.A. Chaudhry, 1981. The Epidemiology of Fasciolosis in Malawi. Part II: Epidemiology in the Definitive Host. Trop. Anim. Hlth. Prod, 13: 27-33.
12. Asanji, M.F. and M.O. Williams, 1984. The Effect of Sex on Seasonal Variation in Single Double Infection of Cattle in Sierra Leone by Dicrocoeliumhospes and Fasciolagigantica. Vet. Parasitol, 15: 247-255.
13. Pandey, G.S. and B. Ahmadu, 1998. Prevalence, Seasonal Variation and Economic Importance of Bovine Fasciolosis in Western Province of Zambia. Zimbabwe, Vet. J., 29: 63-69.
14. Kuthukar, J.M., M.N. Maingi, F.M. Njeruh and J.N. Ombui, 2002. The Prevalence and Economic Importance of Bovine Fasciolosis in Kenya-Analysis of Abattoir Data. Onderspoort, J. Vet. Res., 69: 255-262.
15. Ulayi, B.M., B. Umaru-Sule and S. Adamu, 2007. Prevalence of Dicrocoeliumhospes and Fasciolagigantica Infections in Cattle Slaughtered in Zaria, Nigeria. J. Anim, Vet. Adv., 6(9): 1112-1115.
16. Olusegun-Joseph, T.S., V.F. Doherty and B.O. Edeghagha, 2011. Prevalence of Fasciolosis in Cattle Slaughtered at Zaria Abattoir. J. Environ. Issues, 1(1): 50-56.

17. Ghavami, M.B., A. Rahimi, A. Haniloo and S.N. Mosavinasab, 2009. Genotypic and Phenotypic Analysis of Fasciola Isolates. Iranian J. Parasitol, 4(3): 61-70.
18. Njoku-Tony, R.F., 2011. Bovine Fasciolosis among Slaughtered Cattle in Selected Abatoirs in Imo State, Nigeria. World Rural Observations, 3(1): 59-63.
19. Oryan, A., M. Mansourian, M. Moazeni, B. Nikahval and S. Barband, 2011. Liver Dermatosis in Cattle, Sheep and Goats of Notheastern Iran. Global Veterinaria, 6(3): 241-246.
20. Pfukenyi, D.M. and M. Mukaratirwa, 2004. A Retrospective Study of the Prevalence and Seasonal Variation of Fasciolagigantica in Cattle Slaughtered in Major Abattoirs of Zimbabwe between 1990 and 1999. Onderspoort, J. Vet. Res., 17: 181-187.
21. Gboeloh, L.B., 2012. Seasonal Prevalence of Fasciolagigantica in Slaughtered Cattle in Major Abattoirs in Port-Harcourt. Advances in Agriculture Science and Engineering Research, 2(9): 336-340.
22. Hazzaz, B.K., E. Mohammad, H. Abul, M. Mohiuddin and F.M. Omar, 2010. Prevalence of zoonotic parasitic diseases of domestic animals in different abattoir of Comilla and Brahman Baria region in Bangladesh. Univ. J. zool. Rajshahi. Univ., 28: 21-25.