PREVALENCE OF FASCIOLOPSIS IN CATTLE SLAUGHTERED AT EKE MARKET ABATTOIR, AFIKPO, EBONYI STATE, NIGERIA

[1]NGELE, Kalu Kayong and [2]IBE, Edward

[1]Department of Biology, Microbiology and Biotechnology, Federal University, Ndufu-Alike Ikwo, Abakaliki, Ebonyi State, Nigeria.

[2]Department of Science Laboratory Management, School of Science, Akanu Ibiam Federal Polytechnic, Unwana, Ebonyi State, Nigeria.

Corresponding Author: Ngele, K. K. Department of Biology, Microbiology and Biotechnology, Federal University, Ndufu-Alike Ikwo, Abakaliki, Ebonyi State, Nigeria. **Email:** Kayong73@gmail.com, kayong73@yahoo.com **Phone:** +234 8066316115

ABSTRACT

In the research study carried out to determine the prevalence of fasciolopsis among cattle slaughtered at Eke Market abattoir, Afikpo, Ebonyi State Nigeria, feacal samples collected from the rectum of the slaughtered cattle were analysed, using the standard floatation technique (saturated sodium chloride) to recover the ova from the faecal samples. Post mortem examination of the liver and other organs of the slaughtered cattle were also examined for Fasciola species. Of the 256 cattle slaughtered at the Eke Market abattoir between May 2011 – April 2012, 93(37.89%) were found to be positive with F. hepatica, 60(23.44%) were infected with F. gigantica. The prevalence of fasciolopsis on the livers and other organs examined during post mortem examination were 66(25.78%) for F. hepatica and 42(16.41%) for F. gigantica. F. hepatica was the most common fasciolopsis infection in the study area. There was the presence of Balantidium coli infection among the cattle sampled with a prevalence of 46(17.97%). As a result of the high prevalence of fasciolopsis in the study area, it is recommended that veterinary and health officers should inspect the meat slaughtered at the Eke Market before releasing it to the public for consumption. A range land should be provided for the cattle heads men, which should be devoid of freshwater snails (the intermediate hosts) of Fasciola infections.

Keyword: Fasciolopsis, Prevalence, Cattle, *Fasciola hepatica, Fasciola gigantica*

INTRODUCTION

Fasciolopsis also known as fascioliasis or liver rot is a helminth disease caused by three trematodes, *Fasciola hepatica* (liver fluke) *Fasciola buski* and *Fasciola gigantica* (Mass-coma *et al.,* 2005). The definitive hosts range is very broad and include many herbivorous mammals, including humans etc. The life cycle includes fresh water snails as an intermediate host of the parasite (Forgerson and Claxton, 1999). The world wide losses in annual productivity due to fascioliasis were conservatively estimated at over $3.2 billion per annum (Spithhill *et al.,* 1999). Also, fasciolopsis is now recognized as an emerging human disease. The World Health Organization estimated that 2.4 million people are infected with *Fasciola* species and a further 180 million are at risk of infection (WHO, 1995). Adult *Fasciola* species are localized in the bile ducts of the liver or gallbladder.

Forgerson and Claxton (1999) stated that fasciolopsis has a worldwide distribution. It is very common in countries where cattle and sheep are reared that have the presence of the snail intermediate host (Forgerson and Claxton, 1999).

However, *F. hepatica* is limited to temperate areas and high lands of tropical and sub-tropical regions (WHO, 1995). Schilhorn Van Veen *et al.* (1980) reported prevalence of 65.4% for *F. gigantica* in cattle from Northern Nigeria. High incidence of *F. gigantica* and *F. hepatica* has been reported in cattle, goat and sheep from different towns in Nigeria such as Lagos (Schilhorn Van Veen *et al.,* 1980), Calabar (Ajayi *et al.,* 1987), Jos (Sprent, 1946; Ikem, 1970; Nwakpa, 2006; Yohanna *et al.,* 2012) and Nsukka (Chiejina, 1986).

According to Ikem (1970) and Chiejina (1986) bulky nature of cattle faeces and the high and sufficient moisture content, gives room for larval development and survival which enabled the third larval stage to remain in the faecal droppings in the dry season until the onset of the rains, when they are released and the faeces used as a manure. The larvae of *Heamochus contortus* underwent arrested development to survive the dry season (Enyeniyi, 1969; Magwisha *et al.,* 2002). Yohanna *et al.* (2012) reported 94.8% prevalence of helminths in 54 cattle examined in Jos, Nigeria. Also in Jos Plateau, 30% prevalence of *Fasciola* species was recorded by Sprent (1946). Sprent (1946) reported 34.0% infection with *Fasciola* species from his research work carried out in Bauchi abattoir. A prevalence of 13.3% *Moniezia expansa* infection in cattle was recorded in Ibadan, Nigeria by (Agu, 1976). Gatong and Guthuma (1987) reported 69.3% prevalence of *Oesophagostumum radiatum* in cattle from Kenya. Tolosa and Tigre (2006) reported 46.5% prevalence of *Fasciola* species in cattle slaughtered at Jimma abattoir, Ethiopia. In Ethiopia, the prevalence of bovine fasciolopsis ranged from 11.5% to 87.09% (Tolosa and Tigre, 2006). Fasciolopsis infections in cattle have been reported in the East Africa, islands of Corsica and Turkey (Malone *et al.*, 1998; Mass-coma *et al.,* 1998; Yilma and Godekmerdan, 2004).

Diagnosis is based primarily on clinical signs, seasonal occurrence and previous history of fascioliasis on the farm or the identification of snail habitats, post mortem examination, haematological tests and examination of faeces for fluke eggs. Although, it is impossible to detect *Fasciola* in live animals, liver examination of the slaughtered cattle was found to be the most direct, reliable and cost effective technique for the diagnosis of fascioliasis (Demirci, 2003). However, the objective of this study is to determine the prevalence of fasciolopsis infection in Eke Market abattoir, Afikpo, Nigeria.

MATERIALS AND METHODS

Study Area and Population

Study area: The study was carried out in Afikpo L.G.A. Ebonyi State, Nigeria. Afikpo is located between latitudes 5^0 4'N and 6^0 3'N, Longitudes $7^0$5'E and $7^0$55'E. There are two main seasons in this area, the rainy season which is between April – October and dry season which lasts between November – March. The annual rainfall is about 160mm – 220mm with maximum precipitation occurring between July and September. The temperature ranges between 23.4^0C and 29.9^oC. The relative humidity is between 60 – 80% (23, 24). Afikpo is bounded in the North by Ohaozara L.G.A., by East by Afikpo South L.G.A. Afikpo is bounded in the South by Cross River State and in the West by Abia State (Iloje, 1981).

Study population: Two hundred and fifty six cattle (256) including males and females of five different species, which include; Muturu (humpless), Muturu (short horn), Zebu, red Bororo and dwarf Lulu were sampled. They were brought into Afikpo abattoir from different parts of the country. Afikpo abattoir is one of the biggest abattoir in the state.

Fasciolopsis: Faecal samples were collected directly from the rectum of the slaughtered cattle, using sterilized hand gloves and dropped into sterilized sample bottles containing about

1ml of 10% formal aldehyde, for the preservation of the ova of the helminths in the faecal samples. The samples were quickly transferred to the Parasitology Laboratory of science laboratory technology department, Akanu Ibiam Federal Polytechnic, Unwana for parasitological analysis. Also, post mortem examination of different organs and livers of each slaughtered animal was carefully examined by visualization and palpation of the entire organ, which was followed by transverse incision of the organ across the thin left lob in order to confirm the presence of the parasite (Urguhart *et al.,* 1996; Cheesbrough, 2003).

The standard floatation technique using saturated solution of sodium chloride (NaCl), prepared with a specific gravity of 1.20 was used, in recovering the eggs/ova of the parasite. The parasites recovered were identified using (Cheesbrough, 2003). Also, species identification of the recovered *Fasciola* from post mortem examination of the livers and other organs were based on the morphological features of the parasites and classified into *F. hepatica* and *F. gigantica* (WHO, 1995; Urguhart *et al.,* 1996; Cheesbrough, 2003). The floatation method was advantageous because it helps to concentrate the eggs of the parasites, so that it may not be missed out unlike using direct wet mount method. Also small number of eggs which may be present can still be detected using this method (Urguhart *et al.,* 1996; Cheesbrough, 2003). The data collected were analyzed for prevalence using percentages.

RESULTS AND DISCUSSION

A total of 256 cattle slaughtered were sampled at the Eke Market abattoir, between May 2011 to April 2012. Out of the 256 faecal samples examined from the rectum of the cattle slaughtered at Eke market abattoir, 97(37.89%) were infected with *F. hepatica*, 60(23.44%) were infected with *F. gigantica* and 46(17.97%) were infected with *Balantidium coli* (Table 1). For post mortem examination of the livers and other organs of the slaughtered cattle, 66(25.78%) were infected with *F. hepatica*, while 42(16.41%) were infected with *F. gigantica* (Table 2).

Yohanna *et al.* (2012) had prevalence of 94.8% *Fasciola* infections in cattle slaughtered at Jos abattoir, Plateau State. Furthermore, 34.0% infection of *Fasciola* species has been reported for cattle slaughtered in Bauchi abattoir. Their results were similar to the results obtained from this work on *F. hepatica* prevalence.

Tolosa and Tigre (2006) reported 46.5% prevalence of *Fasciola* in cattle slaughtered at Jimma abattoir, Ethiopia.

The total prevalence of *Fasciola* infections obtained in this research work on cattle slaughtered at Eke market abattoir using faecal samples was 157(61.33%). The high prevalence obtained in this work was probably due to conducive environment, presence of intermediate host and high number disease reservoirs (cattle, goat and sheep) in Afikpo that favours the transmission of *Fasciola* species (Forgerson and Claxton, 1999). Furthermore, the ecological conditions of Afikpo with adequate temperature, rivers and the highlands may have encouraged the transmission of *Fasciola* infections (WHO, 1995; Urguhart *et al.,* 1996). The freshwater snail intermediate hosts of *Fasciola* species (*Lymnaea* species) had been reported in Afikpo (Kalu, 2011; Ngele *et al.,* 2012). Schilhorn Van Veen *et al.* (1980) reported prevalence of 65.4% *Fasciola gigantic* in cattle, from Northern Nigeria. The result is similar with the total prevalence of 61.33% *Fasciola* species recorded in this study.

Post mortem examination of cattle slaughtered in Eke market abattoir indicated that 66(25.78%) of livers and organs were positive for *F. hepatica* and 42(16.41%) positive for *F. gigantica*. Tolosa and Tigre (2006) obtained 63.30% prevalence of *F. hepatica* during post mortem examinations of cattle slaughtered at Jimma abattoir, Ethiopia. Similar study conducted at Ziway abattoir reported that 60.30% of the livers harboured *F. hepatica* and 10.20% harboured *F. gigantica* (Adem, 1994). The prevalence of fasciolopsis infection in Afikpo may also be attributed to variations in climatic and ecological conditions such as altitude, rainfall, temperature and poor livestock management system (Yilma and Malone, 1998).

Table 1: Prevalence of different parasites recovered from the faecal matter of cattle slaughtered at Eke market abattoir, Afikpo, Ebonyi State, Nigeria

Cattle	Number examined	Number infected with *Balantidium coli*	Prevalence (%)	Number infected with *Fasciola hepatica*	Prevalence (%)
Muturu humpless	64	10	3.91	28	10.94
Muturu short horn	64	8	3.13	18	7.03
Zebu	64	13	5.08	24	9.38
Red Bororo	64	11	4.29	15	5.68
Dwarf Lulu	64	4	1.56	12	4.69
Total	256	46	17.97	97	37.89
Species of cattle	**Number examined**	**Number infected with *Fasciola gigantica***	**Prevalence (%)**	**Total infected with *Fasciola* species**	**Prevalence (%)**
Muturu humpless	64	18	7.03	46	17.97
Muturu short horn	64	12	4.69	30	11.72
Zebu	64	15	5.86	39	15.23
Red Bororo	64	9	3.52	24	9.38
Dwarf Lulu	64	6	2.34	18	7.03
Total	256	60	23.44	157	61.33

Table 2: Fasciola species recovered from the post mortem examination of cattle slaughtered at Eke market abattoir, Afikpo, Ebonyi State, Nigeria

Cattle	Number examined	*Fasciola hepatica*	Prevalence (%)	*Fasciola gigantica*	Prevalence (%)
Muturu humpless	64	18	7.03	10	3.91
Muturu short horn	64	12	4.69	7	2.7
Zebu	64	13	5.08	11	4.29
Red Bororo	64	14	5.47	8	3.13
Dwarf Lulu	64	9	3.52	6	2.34
Total	256	66	25.78	42	16.41

Also, the existence of suitable ecological conditions in Afikpo like slow flowing rivers, streams, beaches, lowly marshy areas may contribute to the development of the freshwater intermediate snail hosts.

There was also the co-infection of *Balantidium coli* with fasciolopsis infections in cattle sampled. *Balatidium coli* had a prevalence of 46(17.97%). *Balatidium coli* are common infections of cattle causing abortion in cattle (Crewe, 1977; Soulby, 1982; Arora and Arora, 2010).

In conclusion, fasciolopsis infection has been found in cattle slaughtered at Eke market abattoir, and this can be remedy through proper health management of cattle and adequate control of the freshwater snail intermediate hosts. Veterinary and health officers should always inspect cattle and condemn infected ones as unfit for public consumption.

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