

PARAMETERS OF CONDEMNATION OF ORGANS AND CARCASSES IN SLAUGHTERED CATTLE AND GOATS OF COMMERCIAL ABATTOIR IN BANGLADESH

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ABSTRACT

This study identified the common causes of condemnation of slaughtered cattle and goat in a commercial abattoir in Bangladesh. A total of 8,604 cattle and 27,699 goats were slaughtered for the period of July 2007 to June 2008. All the procedures of standard abattoir were followed to get hygienic meat. Ante-mortem examination and postmortem inspection was done with due attention. In cattle liver and lungs are first list organs for condemnation and incidence of affection is 78% in liver and 19.3% in lungs. Fascioliasis is the leading cause of liver condemnation in cattle (75.5%). Hydatidosis affection found both in liver and lungs but the incidence rate is higher in lungs. Abscess is also a disease responsible for organ condemnation particularly in liver (1.4%), lungs (6.1%) and kidneys (1.1%). In goats, a total of 7,278 organs were condemned due to several diseases or conditions namely fascioliasis, hydatidosis, cysticercosis, abscess, pneumonia and tumor. Among them 5,551 cases were liver (76.3%) and 1,296 cases were lungs (17.8%). Fascioliasis is the leading cause of liver condemnation in goat (94.8%) where pneumonia is for lungs condemnation (69.5%) in goat. However hydatidosis cause both liver (4.6%) and lungs (23.2%) damage at the point of condemnation. Liver, lungs and kidneys abscess are responsible for organ condemnation. Cysticercosis (16.3%), gluteal abscess (15.6%) and grass seed poisoning (6.4%) are also the causal factors of condemnation. The results suggested that the highest incidence of organ condemnation is found in liver and lungs caused by fascioliasis and pneumonia in cattle and goats respectively and grass seed poisoning is the single cause for whole carcass condemnation in goat. The results of the present study concluded that liver and lungs are organs of various affections and mandatory to condemn.

Keywords: condemnation, carcass, abattoir, cattle, goat

INTRODUCTION

An abattoir is a yard-marked well constructed, well equipped and hygienically protected facility where animals are killed for meat for human consumption. Abattoir prevents certain zoonotic diseases through meat consumption and increases the shelf life of meat. Process of meat and supply of public health important meat to people are dependent on the preliminary with abattoir management (Antia, 1982). Numerous abattoir surveys of bovine pathological conditions have been conducted to investigate macroscopic and microscopic abnormalities (Al-Dahash and David, 1977; Ogunrinde, 1980; Antia, 1982; Matovelo and Mwamengele, 1993). The slaughterhouse and its regulations, represents a key control point of livestock production chain (Ogunrinde, 1980; Antia, 1982). Due to unawareness and non-enforcement of laws in our country, public usually purchase meat which cannot ensure protection to consumers from the effect of many potential danger of inferior meat (Rahman, 2007).

Abattoir provides excellent opportunities for investigating diseases of both economic and public health importance and can play an important role in the control and prevention of those diseases. Surveillance at the abattoir allows for all animals passing in to human food chain to be examined for unusual signs, lesions or specific disease (Alton *et al.*, 2010). The use of abattoirs as monitoring centres for animal disease

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eradication programmes in Nigeria (Alonge and Fasanmi, 2005). Meat borne diseases and problems relating to the sanitation of major concern (Tekka, 1997). It is evident and well recognized that conditions of pre-harvest and postharvest handling and mechanical, physical, chemical, and microbial effects are the leading causes of reduced shelf life, deterioration and spoilage of meat foods (Rahman, 2007). There are several diseases and disease conditions where the portion of the organ or whole organ condemned (Mezegebu, 2003). It is reported that the major causes of organ condemnations were fascioliasis, hydatid cysts, tuberculosis and pneumonia of various origin (Tham and Sheika-Omar, 1981). The task of abattoir is to examine the animal both in behavior and internal structure (Kara *et al.*, 2009). After taking all necessary measures against contamination and hygienic measure, the antemortem and post-mortem examinations are carried out for prevention of spreading of communicable diseases through meat (Van Longtestijin, 1993). Meat borne diseases and problems relating to the sanitary and microbiological quality of meat foods continue to be the great concern for Bangladesh and other countries of the world (Yimam, 2003). There are several diseases and disease conditions which direct the condemnation of portion of the organ, whole organ and even whole carcass (Jibat, 2006). It is reported that the major causes of organ condemnations were fascioliasis, hydatid cysts, tuberculosis and pneumonia of various origin (Ojo, 1992). Bengal Meat Processing Industries Limited (BMPIL) is the only international standard abattoir in Bangladesh condemning organ and whole carcass frequently. But there is no record of diseases and disease conditions relating to condemnation of carcass in the organized abattoir in Bangladesh. The causes of condemnations are also not studied yet. The present study was, therefore, undertaken to identify the common causes of condemnation of slaughtered animals or its whole organ or parts of organs in a commercial abattoir of Bangladesh.

MATERIALS AND METHODS

The study was conducted in Bengal Meat Processing Industries in Pabna during the period from July 2007 to June 2008. At this time 8,604 cattle and 27,699 goats' heads were brought to the processing plant.

Ante-mortem inspections

From arrival to slaughter, animals were undertaken into three ante-mortem inspections according to the standard operating procedure (SOP) (FAO, 2000). The first ante-mortem inspection was done just immediately after unloading of animal, second one was done during resting of the animals and last one was done just before slaughtering of the animals. Animals showing signs of infectious diseases like foot and mouth diseases, rabies, foot rot, peste-des-petits ruminants and tuberculosis that may affect other animals or having zoonotic importance were rejected and removed from Bengal premises.

Postmortem inspections

Three postmortem inspections were performed in the slaughter house according to the standard protocol. The first postmortem inspection was performed in the head region. The second postmortem inspection was done in offal tray for viscera. The final postmortem inspection was carried out in the whole carcass. During Post mortem inspection, liver, lungs and kidneys were thoroughly inspected by visualization, palpation and making systemic incisions where necessary for the presence of cyst, parasite and other abnormalities. Pathological lesions were differentiated and judged according to guidelines on meat inspection for developing countries and classified into the following categories of judgment namely approved as fit for human consumption, conditionally approved as fit for human consumption, totally condemned as unfit for human consumption and partially condemned as unfit for human consumption (Ezana, 2008).

RESULTS AND DISCUSSION

A total of 8,604 cattle and 27,699 goats were slaughtered during the study period. In case of cattle among the slaughtered 99.1% were male and 0.9% were female. In case of goats where 76.8% were male and

23.2% were female. The male and female percentage of cattle and goats depends on the decision or choice of the management of BMPIL. The BMPIL asked suppliers to provide the animal according to its requirement.

The causes of condemnation of different organs, part of organs or whole carcasses of cattle are presented in details in Table 1. A total of 1323 organs and part of organs were condemned due to several reasons. The main organs condemned were liver (78.0%) and lungs (19.3%). Condemnation of lungs (45.66%) and liver (32.94%) have been reported earlier by Cadmus and Adesokan (2009). They reported the accounted for most organ condemned. The variation of the findings may be due to variation of geographical location and the incidence of diseases affecting liver and lungs.

A total of 128 livers were totally condemned while the remaining 897 livers were trimmed to remove the affected. The rejection of liver was mainly due to fascioliasis (78.0%). Due to fascioliasis, total rejection is 11.7% or partial condemnation is 88.3% of the organ. The findings of study are to similar of Phiri (2006). He mentioned that the fascioliasis and hydatidosis were responsible for offal/organ condemnations.

The number of condemned lungs was 256 of which 134 lungs were totally condemned and 120 lungs were partially condemned. Hydatidosis (8.5%) was the main cause for condemnation of lungs. Hydatidosis caused 0.5% liver and 8.5% lungs condemnation. Similar findings have been reported by Nigatu *et al.* (2009). They reported that 16% animals were found harboring hydatid cysts. The incidence of kidney condemnation is 2.6%. According to Kambrage *et al.* the rejection rate of kidney due to abscessation in Tanzania was 0.22% which is much lower than the present finding. The differences in the rejections rates could be attributed to the differences in the prevalence of different pathogens in different countries, their virulence and variation in animal management systems. Twenty seven carcasses were condemned in this study was due to tuberculosis. Tuberculosis causes nodular lesions in all the lungs and adheres with the thoracic wall and other nearby organs of the body. This result has been supported by Phiri (2006). He added that bovine tuberculosis is the most important cause of condemnations of bovine carcass because lesion may be generalized or localized and it has severe zoonotic importance.

Table1. Causes of condemnation of organs or carcasses in cattle at Bengal meat abattoir

Reasons for condemnation	No. of organs affected by a specific cause (%)	Portion condemned to a specific cause (%)	Whole organ condemned due to a specific cause (%)	Whole carcass condemned (%)	Affected organ
Fascioliasis	999 (75.5)	882 (88.3)	117 (11.7)	-	Liver
Hydatidosis	7 (0.5)	-	7 (100.0)	-	
Abscess	19 (1.4)	15 (78.9)	4 (21.1)	-	
Tuberculosis	7 (0.5)	-	-	7 (100.0)	
Subtotal	1032 (78.0)	897	128	7	
Hydatidosis	113 (8.5)	-	113 (100.0)	-	Lung
Abscess	81 (6.1)	69 (85.2)	12 (14.8)	-	
Pneumonia	42 (3.2)	33 (78.6)	9 (21.4)	-	
Tuberculosis	20 (1.5)	-	-	20 (100.0)	
Subtotal	256 (19.3)	102	134	20	
Abscess	14 (1.1)	9 (64.3)	5 (35.7)	-	Kidney
Hydronephrosis	21 (1.6)	12 (57.1)	9 (42.9)	-	
Subtotal	35 (2.6)	21	14	0	
Total	1323 (100.0)	1020	276	27	

In goats, on the basis of pathological lesion 7,278 organs and part of organs were condemned during the period. The causes of condemnation of different organs, part of organs or whole carcasses of goat are presented in Table 2. Compared to the findings of Rosa *et al.* (1989) who reported the incidence of hepatic

abscesses in goats in Northeast Brazil to be 2.5%, in the present study the liver condemnation rate due to abscesses was 0.6% in goats. Normally liver abscesses are bacterial based and the infection occurs due to migrating intestinal parasites which pre-optimize the conditions for a secondary bacterial infection (Rosa *et al.*, 1989).

Table 2. Causes of condemnation of organs or carcasses in goats at Bengal Meat Abattoir

Reasons for condemnation	No. of organ affection (%)	Partial condemned of organ (%)	Whole organ condemned (%)	Whole carcass condemned (%)	Affected organ
Fascioliasis	5,262 (94.8)	664(12.6)	4,598(87.4)	-	Liver
Hydatidiosis	254 (4.6)	0(0.0)	254(100.0)	-	
Abscess	35 (0.6)	8(22.9)	27 (77.1)	-	
Sub total	5551 (76.3)	672	4879	-	
Pneumonia	900 (69.5)	315(35.0)	585(65.0)	-	Lung
Hydatidiosis	301 (23.2)	0(0.0)	301(100.0)	-	
Abscess	95 (7.3)	5(5.3)	90(94.7)	-	
Sub total	1296 (17.8)	320	976	-	
Abscess	8 (100.0)	0 (0.0)	8 (100.0)	-	Kidney
Sub total	8 (0.1)	0	8	-	
Tumor	261 (61.7)	0(0.0)	261(100.0)	-	Muscle
Cysticercosis	69 (16.3)	51(73.9)	18(26.1)	-	
Gluteal abscess	66 (15.6)	0(0.0)	66(100.0)	-	
Grass seed poisoning	27 (6.4)	22(81.5)	-	5(18.5)	
Sub total	423 (5.8)	73	345	5	
Total	7278	1065	6208	5	

In the case of lungs 1294 were condemned of which 976 lungs were totally condemned and remaining 320 lungs were partially condemned. Pneumonia (69.5%), hydatidiosis (23.2%) and presence of abscess (7.3%) were the causal factors for condemnation of lungs. This study is supported by Ezana (2008) who found that pneumonia and hydatidiosis contributed for the condemnation of lungs in goats.

Muscles cover 5.8% of total organs condemnation. The major cause of muscles condemnation was tumor (61.7%), followed by cysticercosis (16.3%), gluteal abscess (15.6%) and grass seed poisoning (6.4%). Rahman (2007) stated that tumor and cysticercosis were the major cause for condemnation of muscle. Five whole carcasses were condemned due to grass seed poisoning that causes generalized small nodular lesions in all the muscles of the body.

The results of the present study concluded that liver and lungs were the mostly affected organs to be condemned caused by mainly fascioliasis and Hydatidiosis, respectively and tuberculosis was the single cause for whole carcass condemnation in cattle. In goats, liver and lungs are the organs to be damaged by fascioliasis and pneumonia respectively. Grass seed poisoning is the single cause for whole carcass condemnation in goats. Further study is needed to analyse the financial losses due to organs and carcass condemnation in abattoir.

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