Major causes of organ condemnation in cattle and sheep slaughtered at Motta abattoir North-West Ethiopia.

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Abstract: The Study was conducted from July 2011 up to September 2011 to determine the major causes of organ condemnation at Matta abattoir. Through meat inspection procedures requires two steps. Ante mortem inspection attempts to avoid introduction of clinically diseased animals in to the slaughter. During postmortem inspection liver, lung, heart, kidney and tongue as well as carcass were thoroughly inspected by visualization, palpation and systemic incision. The major pathological findings detected in the organ during postmortem inspection were calcification, hydatidcyst, fasciolosis, abscess, nephritis, imperfect bleeding and *C. bovis* were detected in the organ. A total of 110 cattle and 17 ovine were inspected during ante mortem inspection and the following abnormalities were diagnosed. Bovine horn damage 1(0.9%) was diagnosed and passed for emergency slaughter through post mortem examination. Examination of 110 cattle was studied during post mortem examination and the result revealed that 48(43.6%) liver total condemnation, 10(9.1%) lung total condemnation, 11(10%) liver partial condemnation, 7(6.4%) partial condemnation of lung, 1(0.9%) partial condemnation of kidney, 1(0.9%) total condemnation of heart. And also 17 ovine was studied during post mortem inspection and the result revealed that 5(29.4%) liver total condemnation, 6(35.3 %) liver partial condemnation, 1(5.9%) total condemnation of kidney, 1(5.9%) tongue conditionally approved, due to gross abnormalities.

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1. Introduction

Many animals and their products are used for human consumption in Ethiopia. Red meat, milk, egg, honey and edible visceral organs are in the list. One of the loss for endemic disease in expressed interims of organ condemnation. The most commonly affected organ being liver and lung due to fasciolosis and hydatidosis respectively (Birhanu, 2006).

Parasitic diseases are among the major factors responsible for the low productivity of live stock in Ethiopia (Shiferaw, 2002). These infections not only cause clinical disease and mortalities but also economic loss through production loss and condemnation of specific organ at slaughter. Various investigations have been conducted through abattoir surveys to determine the prevalence and economic impotence of organ condemnation cause in Ethiopia. However most of the surveys out in different abattoir of the country paid much attention to parasitic cause of organ condemnation namely fasciolosis and hydatidosis as these are usually considered to be major economic and public health importance in meat inspection (Yilma, 1983).

Through meat inspection procedures requires two steps (Birhanu, 2006) Ante mortem inspection and post mortem inspection. Ante mortem inspection attempts to avoid introduction to clinically diseased animals in to slaughtered and be repeated if slaughter has been delayed over a day. (Birhanu, 2006).

Post mortem inspection is screening or staining process to separate the normal from the abnormal. It is the center around which meat hygiene revolves. Since, it provides information in dispensable for the scientific evaluation of clinical signs and pathological process that affect the whole sameness of meat (Beyazen, 1995). All gross lesions should be identified at least in a general way (Birhanu, 2006). Routine post mortem inspection of carcass or an organ should be curried out as soon as possible after competition of dressing.

It is necessary to be aware of the extent to which the public is exposed to certain zoonotic disease detected in abattoir and the financial loss through condemnation of affected organ and carcass (Fisseha, 1983). the major cause of the organ condemnation during post mortem inspection are disease originated by parasite bacteria, Viruses of these disease liver fluke in the liver and hydatidcyst in liver, lung and kidney are mainly involved (Birhanu, 2006).

The final judgment as to the action to be taken with an organ a carcass or part of carcass is based on the total evidence produced by observation, palpation, incision, smell any ante mortem inspection sign and result of any laboratory tests (Birhanu, 2006).

There for objective of the study are:-

- To identify the major cause's of organ condemnation in bovine and ovine slaughtered at Motta abattoir.

2. Materials And Methods

2.1study area

The study was conducted from July 2011 up to September 2011 at Motta abattoir. Geographically the area is located at an elevation of 2663 masl. Motta receive a mean annual rainfall of 1100-1889 mm. the long rain season extends from June to September followed by a dray season rainy October to February. The shorter rainy season lasts from March to May. The average minimum temperature is 10^0c and the maximum temperature is 27^0c (Motta woreda Agricultural office, 2002). The total live stock population in Motta 164841 cattle population.

2.2 study Animals

A total of 110 adult bovine and 17 ovine were slaughtered. The study was conducted on edible organs such as the heart, liver, kidney, lung, tongue and carcass by inspection, palpation and systemic incision.

2.3. Study Methodology

2.3.1. Ante mortem inspection

Ante mortem inspection was conducted in both sex and adult animals for each individual animal inter in to lairage both side of the animal was inspected at rest and in motion more over the general behavior of the animal nutritional status clinical sign of disease and abnormalities of any type was registered according to the standard ante mortem inspection procedure. i.e adequate rest in lairage don't give feed and water with in 24hrs and then detect ante mortem inspection for each individual animal. (Rahmeto, 1992).

2.3.2 Post mortem inspection

During post mortem inspection liver heart and kidney and tongue as well as carcass were thoroughly inspected by visualization palpation and systemic incision, were differentiated pathological lesion and judgment according to the meat inspection procedure (Birhanu, 2006).

The decision at post mortem inspection is classified in to the following categories of judgment.

- Approved as fit for human consumption
- Conditionally approved as fit for human consumption
- Totally condemned as unfit for human consumption
- Partially condemned as fit for human consumption

2.3.3 Data Analysis

Collected data was intered in to Microsoft Excel spread sheet software Program. Chi-square static's was used to determine the significance of major cause of organ condemnation in cattle and ovine in Motta abattoir.

3. Results

3.1. Ante Mortem Inspection

Inspection of the living animal in a short time prior to slaughter to detect animal affected with diseases or conditions which are difficult to detect at post mortem inspection and to avoid unnecessary suffering (for example, in case of such injuries as fracture, bruising, laceration). Those abnormalities were diagnosed by inspection, palpation and auscultation. Out of 110 cattle conducted ante mortem inspection in Motta abattoir 1(0.09%) horn damage which is approved for emergency slaughter, 109(99.1%) normal which is approved for slaughter. Out of 17 ovine17(100%) normal which is approved for slaughter.

3.2. Postmortem Inspection

Table 1: organs condemnation

Judgment	Species		Total	Sex		Total
	Bovine	Ovine		Male	Female	
liver total condemnation	48(43.6%)	5(29.4%)	53(41.7%)	53(46.5%)	-	53(41.7%)
lung total condemnation	10(9.1%)	-	10(7.9%)	-	10(76.9%)	10(7.9%)
liver partial condemnation	11(10%)	6(35.3%)	17(13.4%)	16(14%)	1(7.7%)	17(13.4%)
partial condemnation lung	7(6.4%)	-	7(5.5%)	7(6.1%)	-	7(5.5%)
kidney total condemnation	-	1(5.9%)	1(0.8%)	-	1(7.7%)	1(0.8%)
partial condemnation kidney	1(0.9%)	-	1(0.8%)	1(0.9%)	-	1(0.8%)
total condemnation of heart,	1(0.9%)	-	1(0.8%)	1(0.9%)	-	1(0.8%)
tongue conditionally approved	-	1(5.9%)	1(0.8%)	1(0.9%)	-	1(0.8%)

From the total of 110 cattle slaughtered in the abattoir during the study period 48(43.6%) liver total condemnation, 10(9.1%) lung total condemnation,11(10%) liver partial condemnation, 7 (6.4%) lung partial condemnation, 1(0.9%) kidney partial condemnation, 1(0.9%) heart total

condemnation. And also 17 ovine slaughtered and the result revealed that 5 (29.4%) liver total condemnation, 6 (35.3%) liver partial condemnation, 1 (5.9%) kidney total condemnation, 1(5.9%) tongue conditionally approved. And also in male 53(46.5%) liver total condemnation, 16(14%) liver partial condemnation, 7(6.1%) partial condemnation of lung, 1(0.9%) partial condemnation kidney, 1(0.9%) total condemnation of heart, 1(0.9%) tongue conditionally approved, and in female 10(76.9% lung total condemnation, 1(7.7%) liver partial condemnation, 1(7.7%) kidney total condemnation, due to gross abnormalities (table 1).

Liver condemnation

The overall liver condemnation due to various cause are 59(53.6%) in Bovine and 11 (64.7%) in ovine. And also in male 69(54.3%) and in female1(0.8%). The principal cause of liver condemnation are fasciolosis, abscess, hydatidcyst and calcification. (table 2).

Table 2: distribution of cause of liver condemnation in Motta abattoir

Causes of liver condemnation	Species		Sex	
	Bovine	Ovine	Male	Female
Fasciolosis	37 (33.6%)	-	37(32.5%)	-
Abscess	3(2.7%)	-	3(2.6%)	-
Hydatid cyst	8 (7.3%)	5(29.4%)	13(11.4%	-
Calcification	11(10%)	6(35.5%)	16(14%)	1(7.7%)
Total	59(53.6%)	11(64.7%)	69(54.3%)	1(0.8%)

The difference cause of liver condemnation in ovine is significance higher than bovine (P<0.05).

Lung condemnation

The over all lung condemnation due to different cause are in bovine 17(15.5%) and ovine 1(5.9 %). And also in male 8(6.3%) and in female 11(8.7%) The principal cause of lung Condemnation are abscess, Hydatidcyst, calcification (Table 3).

Table3:-distribution of cause of lung condemnation in Motta abattoir

Causes of lung condemnation	Species		Sex	
	Bovine	Ovine	Male	Female
Abscess	10 (9.1%)	-	-	10(76.9%)
Hydatidcyst	-	1(8.9%)	-	1(5.9%)
Calcification	7(6.4%)	-	8(7%)	-
Total	17(15.5%)	1(5.9%)	8(6.3%)	11(8.7%)

The different cause of lung condemnation in cattle is significantly higher than ovine (P<0.05)

Kidney condemnation

The over all kidney condemnation due to different cause are in bovine 1(0.9 %) and ovine 1 (5.9%). And al so in male 1 (0.9%) and in female 1(7.7%). The principal cause of kidney condemnation were abscess and nephritis (Table 4).

Table 4: distribution of causes of kidney condemnation in Motta abattoir

Causes kidney condemnation	species		Sex	
	bovine	Ovine	male	female
Abcess	1(0.9%)	-	1(0.9%)	
Nephritis	-	1(5.9%)		1(7.7%)
Total	1(0.9%)	1(5.9%)	1(0.9%)	1(7.7%)

The different cause of kidney condemnation in ovine is significantly higher than bovine (p<0.05).

Heart condemnation

Heart condemnation due to in perfect bleeding for bovine is 1(0.9%) and ovine is normal, and also in male 1(0.9%), in female normal (Table 5).

Table 5: distribution of cause of heart condemnation in Motta abattoir

Causes of heart condemnation	Species		Sex	
	Bovine	Ovine	Male	Female
Imperfect bleeding	1(0.9%)	-	1(0.9%)	-
Total	1(0.9%)	-	1(0.9%)	-

The different cause of heart condemnation are not significant (p>0.05)

Tongue conditionally approved

Tongues conditionally approved due to c. bovine are in bovine normal and ovine 1(5.9%). And also male 1(0.9%), in female normal (Table 6).

Table 6: The distribution of cause of tongue conditionally approved in Motta abattoir.

Causes of tongue conditionally approved	Species		sex	
	Bovine	ovine	Male	Female
C.bovis	-	1(5.9%)	1(0.9%)	-
Total	-	1(5.9%)	1(0.9%)	-

4. Discussion

Diseased or abnormalities that show sign during AMI should not be allowed to enter the abattoir (Teka 1997). In this study it was found that 1cattle (0.9%) horn damage was suspected and passed for emergency slaughter. Detailed post mortem examination of the carcass was needed to confirm the cause and localities of this conditions. PMI of the carcass of these animal revealed that the swellings were all the localized to one area and the lameness was due to trauma to the legs while being driven to the abattoir. After trimming the affected parts the rest part pass as fit for human consumption.

The study was conducted from July 2011 up to September 2011 revealed that out of 110 bovine slaughtered 48(43.6%) liver total condemnation, 7(6.4%) lung partial condemnation,1(0.9%) kidney partial condemnation,1(0.9%) total condemnation of heart. And also 17 ovine were slaughtered 5(29.4%) liver total condemnation, 6 (35.3%) liver partial condemnation, 1(5.9%) total condemnation of kidney, 1(5.9%) tongue conditionally approved. In male 53(46.5%) liver total condemnation, 16(14%) liver partial condemnation, 7(6.1%) partial condemnation of lung 1(0.9%) partial condemnation of kidney, 1(0.9%) total condemnation of heart, 1(0.9%) tongue conditionally approved. In female 10(76.9%) lung total condemnation, 1(7.7%) liver partial condemnation, 1(7.7%) total condemnation of kidney duo to gross abnormalities, such as abscess, nephritis, calcification, imperfect bleeding, fasciolosis, C. bovis were important causes for the condemnation of edible organs like liver, kidney, lung, tongue and heart at Motta abattoir. This may also reflect the same scenario in other slaughter houses in Ethiopia.

The main organs condemned were the liver and lungs. The rejection of the liver was mainly due to liver fluke infestation, which resulted in total condemnation of the organ. The fluke, identified as *Fasciola gigantica* and *Fasciola hepatica* were found in the liver of bovine and ovine. The majority of the lung was condemned because of hydatidosis and calcification which are common finding in lung of bovine and ovine. In this study revealed that parasites and poor management practices are the major causes of organ condemnations. Parasitic causes like *Fasciola* species and hydatidosis were found to be the major parasitic conditions responsible for organ condemnation.

Hydatidosis is an important disease of ruminants and man in Ethiopia affecting primarily the liver and lungs (Teka 1997). Similarly in my present study hydatidcyst were more frequently observed in the liver than the lungs of bovine and ovine. In Ethiopia Fasciolosis has been reported to be one of the major disease problems of live stock industry. An annual loss of approximately 64 million USD was estimated due to reduced of cattle production by Fasciolosis (Gemachew and Mamo, 1979; Tilahun, 1994; Sirage, 1991) reported a prevalence of 71% and 58% in cattle slaughtered at Addis Ababa BDR Abattoir respectively. Considerable loss from liver condemnation and reduced meat production form Fasciolosis have been reported in different parts of Ethiopia (Haymanot, 1990). Similarly in my study fasciolosis is mainly involved in liver condemnation because this could be attributed to the presence of large marshy and water logged areas and the similarity among the kebeles in agro-ecological conditions such as Altitude, rainfall, and temperature favoring the development of intermediate hosts and the parasite stages.

The presence of difference in the rate of organ condemnation from pathological abnormalities by sex and species indicates that disease susceptibility with in sex and species were different.

5. Conclusion And Recommendations

A considerable number of organs are condemned at Motta abattoir mainly due to hydatidosis and Fasciolosis and also some other problem associated with kidney problem. Through these organs are classified as offal they are edible and thus economic evaluation of direct losses was high. Inaddition due to the maintenance of zoonotic disease like hydatidosis the public health significance in immense.

Therefore based on the finding regarding the economic losses and public health significance the following are recommended.

❖ Meat inspection should be conducted more seriously to avoid the public health significance from zoonotic disease common at postmortem.

❖ Condemned organs should be properly disposed to break the transmission cycle of hydatidosis.

❖ Cooperation between veterinarian and medical personnel's is importance in order to control zoonotic disease.

❖ The public should be educated to slaughtered animal in abattoir and consume cooked meat and products.

❖ The epidemiology of fasciolosis and hydatidosis should be properly studied and control measure implemented increase where the diseases are common.

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