

PREVALENCE AND ETIOLOGY OF OMASAL AND ABOMASAL IMPACTION IN BUFFALOES AND CATTLE: A NECROPSY STUDY

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ABSTRACT

The present study was conducted on 76 buffaloes and 71 cattles carcasses. The carcasses were examined to know the cause of the death, and the omasum and abomasum were thoroughly examined for impactions. It was possible to divide the impactions into two categories- related to the diet and associated with other diseases. The overall prevalence of omasal impaction and abomasal impaction was 29.2% and 8.2%, respectively. Both primary omasal impaction and abomasal impactions were associated with wheat straw. The overall prevalence of omasal impaction was significantly ($P < 0.05$) higher in buffaloes than cattle but did not differ significantly ($P < 0.05$) between different age groups. The prevalence of abomasal impaction did not differ significantly ($P < 0.05$) between cattle and buffaloes. Both omasal and abomasal impaction were mostly secondary to other diseases. The common causes of secondary omasal impaction were traumatic reticuloperitonitis/pericarditis, intestinal obstruction, peritonitis and theleriosis. The common causes of abomasal impaction were

traumatic reticuloperitonitis/pericarditis and abomasal ulceration. The present established causes of secondary omasal impaction are a new finding and an addition to current knowledge on omasal impaction. This study suggests predisposition of buffaloes to omasal impaction.

Keywords: *Bubalus bubalis*, buffaloes, omasum, abomasum, impaction, prevalence, etiology

INTRODUCTION

Digestive tract diseases of cattle and buffaloes constitute a major clinical problem to the veterinarians all over the world. These diseases are wide spread and reported throughout the year from different parts of India, and data related to prevalence of gastrointestinal disorders has been generated in a study (Hussain and Uppal, 2015). But there is still lack of reliable epidemiological data on omasal and abomasal impaction, particularly for buffaloes. Omasal impaction is one of the emerging forestomach affections in cattle

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and buffaloes, reported particularly from India (Toor and Saini, 2008; Turkar and Uppal, 2007; Imran *et al.*, 2011; Hussain *et al.*, 2013). Omasum impaction is thought to be secondary in bovine gastrointestinal disorders (Radostits *et al.*, 2007). But the causes of secondary omasal impaction have not been established in literature. Although the dietary abomasal impaction is well recognized, there is perhaps only report in buffaloes (Athar *et al.*, 2011). Throughout the world, there is limited information on prevalence, epidemiology, and etiology of omasal and abomasal impaction particularly for buffalo. Keeping in view the above facts, the present study in cattle and buffaloes was undertaken with two objectives. To study the prevalence of omasal and abomasal impaction in cattle and buffaloes, and to identify causes of omasal and abomasal impaction in cattle and buffaloes.

MATERIALS AND METHODS

The cattle and buffaloes in this study originated from different farms/herds in the Punjab. The study was conducted on 147 carcasses (76 buffaloes and 71 cattles) presented at post mortem hall of Department of Veterinary Pathology, GADVASU, Ludhiana during the study period from February 2013 to July 2014. The carcasses were examined to know the cause of the death, and the omasum and abomasum was thoroughly examined for impaction. Before necropsy, majority of animals had a clinical examination and laboratory evaluation along with radiography and ultrasonography. Out of 147 cases, 105 had a diagnosis before necropsy while others were diagnosed on necropsy. This study did not include cases of simple dilatation of the omasum/

abomasum without impaction. It was possible to divide the impactions into two categories- those which were related primarily to the diet and those which were associated with other diseases.

The statistical differences of prevalence between cattle and buffaloes, and between age groups was determined using χ^2 - test. The differences were regarded significant if P-value was <0.05.

RESULTS AND DISCUSSION

On the basis of clinical examination and necropsy findings the 147 cases were divided into 22 disease conditions. The 147 cases comprised of different disease primarily consisting of gastrointestinal disorders cases (43.5%, 64/147), fracture (17%, 25/147), dystocia (16.3%, 24/147) and thoracic disorders (12.9%, 19/147) (Table 1). The animals categorised as fracture had fracture of different limb bones or hip dislocation and had been euthanized due to poor prognosis. The animals with dystocia had been either euthanized or had died during the correction of dystocia. The overall prevalence of omasal and abomasal impaction was 29.3% (43/147) and 8.2% (12/147), respectively (Table 1, Figure 1, 2 and 3). Out of 147 cases, three buffaloes had primary omasal impaction and one cow had primary abomasal impaction. Out of 43 cases of omasal impaction, 3 were primary while 40 were secondary omasal impaction cases. Out 40 cases of secondary omasal impaction 17 were cows and 23 were buffaloes. The prevalence of present study may be actually higher than in general population of cows and buffaloes, owing to inclusion of only diseases cattle cows and buffaloes. In a study on primary omasal impaction (Hussain *et al.*, 2013), the prevalence of has been

reported to be 4.1% which is higher than the present study. However, the causes of secondary omasal impaction had not been established in that study and the authors of that study have stated that this prevalence of primary omasal impaction may be actually higher than in the general population of cows and buffaloes, owing to inclusion of only bovine gastrointestinal dysfunction cases (Hussain *et al.*, 2013). In this study all the three cases of primary omasal impaction were associated with wheat straw. In previous studies also wheat straw has been implicated as the main cause of omasal impaction in cattle and buffaloes (Turkar and Uppal, 2007; Toor and Saini, 2008; Hussain *et al.*, 2013)

All except eight cases (6 cattles and 2 buffaloes) were females. The overall prevalence of omasal impaction was significantly ($P<0.05$) higher in buffaloes (34.21%, 26/76) than cattle (23.94%, 17/71). However, the prevalence of abomasal impaction did not differ significantly ($P<0.05$) between cattle (12.7%, 9/71) and buffaloes (3.95%, 3/76). The cause for higher prevalence of omasal impaction in buffaloes could not be established in this study and needs further substantiation. May be this is due to different number and function of omasal leaves in cattle and buffaloes. Similar to present study, Sharma *et al.* (2015) observed that impactions were significantly more in buffaloes as compared to cattle.

Out of 43 cases of omasal impaction, 13 were up to 4 years old, 19 were >4 to 7 years, and 11 were >7 years old. The prevalence of omasal impaction did not differ significantly ($P<0.05$) age groups. In abomasal impaction except one cow of 4 years, all animals were 5 to 8.5 years old.

The causes of secondary omasal/abomasal impaction are listed in Table 1. The common causes of secondary omasal impaction

were traumatic reticuloperitonitis/pericarditis, intestinal obstruction, peritonitis and theleriosis. The common causes of abomasal impaction were traumatic reticuloperitonitis/pericarditis and abomasal ulceration. Three cases of dystocic animals had omasal impaction, one had abomasal impaction, and one had impaction of both omasum and abomasum. This was an interesting and new finding. None of cases of fracture showed omasal or abomasal impaction. It is difficult to establish whether impaction was cause of dystocia or vice-versa. The present established causes of secondary omasal impaction are a new finding and an addition to current knowledge on omasal impaction. Similar to present findings, Ashcroft (1983) reported that out of 75 necropsy reports of abomasal impaction in cattle, 20% had lesions of traumatic reticuloperitonitis. However 60% cases in that study were believed to be primarily dietary in origin resulting from the ingestion of too much fibre while the remaining 20% did not fit into either category. Previous studies on traumatic pericarditis (Hussain *et al.*, 2018), caecal dilatation (Hussain *et al.*, 2012), and peritonitis (Hussain and Uppal, 2014) and rumen impaction (Hussain and Uppal, 2012) have not mentioned the necropsy findings, so the status on omasum in these studies cannot be commented. This may be attributed to prospective nature of studies. However, Hussain *et al.* (2015), reported that omasum was dilated and impacted in one out of eight cases of intestinal obstruction in cattle and buffaloes. Out of 12 cases of abomasal impaction, six had concurrent omasal impaction (one each of TRP, TP, Abomasal ulceration, primary abomasal impaction, diaphragmatic hernia and dystocia). Concurrent omasal and abomasal impaction in beef suckler cows has been reported earlier also (Simkins and Nagele, 1997). The study also revealed that gastrointestinal disorders were

Table 1. Prevalence and causes of omasal and abomasal impaction in cattle and buffaloes.

Primary diagnosis (n)	Omasal impaction	Abomasal impaction
Primary omasal impaction (3)	3	0
Primary abomasal impaction (1)	1	1
Traumatic reticulo-peritonitis/ pericarditis (25)	11	3
Intestinal obstruction (8)	5	1
Diaphragmatic hernia (8)	2	1
Peritonitis (6)	4	0
Abomasal ulcer (5)	2	2
Rumen impaction (3)	2	1
Caecal dilatation (2)	1	0
Lactic acidosis (2)	0	0
Reticular abscess (1)	0	0
Fracture (25)	0	0
Dystocia (24)	4	2
Pericarditis (10)	3	1
Pneumonia (4)	0	0
Hydrothorax (3)	1	0
Lung cyst (2)	0	0
Theileriosis (8)	4	0
Meningitis (4)	0	0
Post parturient hemoglobinuria (1)	0	0
Nasal tumour (1)	0	0
Urinary bladder tumour (1)	0	0
Total (147)	43	12



Figure 1. Necropsy view of omasal impaction, packed with dry, firm ingesta.



Figure 2. Photograph showing severe abomasal impaction with tightly packed dry contents on necropsy.



Figure 3. Photograph showing omasal and abomasal impaction on necropsy.

the main cause of mortality in clinical cases of cattle and buffaloes, the main being TRP and its complications.

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