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Sandhya Morwal

Assistant Professor, Department
of Veterinary Medicine (VCC)
College of Veterinary and Animal
Science, Navania, Udaipur,
Rajasthan, India

Role of health status of buffalo in different fore-stomach disorders

Sandhya Morwal

Abstract

The present research discusses about the role of pregnancy, effect of calving status, history of dystocia, production of milk yield and occurrence of tympany in fore stomach disorders. Total 2145 cases of buffaloes were screened, among of them 107 buffaloes were affected with different fore stomach disorders like simple indigestion, acidosis, alkalosis, tympany, ruminal impaction, traumatic pericarditis, traumatic reticulo-peritonitis and diaphragmatic hernia. These disorders commonly reported in buffaloes those were parturiated one to three months ago and some affections were reported in advance pregnancy. Complete history and clinical examinations were performed. Sudden decreased in milk yield was very common history in all disorders. In studied cases, 55.14% of buffaloes were non pregnant and 44.86% in different stages of pregnancy. Fever was recorded only in buffaloes affected with traumatic pericarditis (100%) and traumatic reticulo-peritonitis (88.89%). Most of the buffaloes (54.20%) showed mild to severe abdominal pain. Mild, persistent and recurrent tympany was observed in 39.25%, 25.23% and 16.82% buffaloes affected with various fore-stomach disorders.

Keywords: Fore-stomach disorder, buffalo, pregnancy, calving, abdominal pain

Introduction

In buffaloes' digestion, ruminal micro flora has a very important role, if ruminal micro floral activity disturbed due to any reason, then protozoal count in rumen decreased and buffalo becomes susceptible to many metabolic and digestive disorders (Tajima *et al.*, 2007) ^[15].

The most common digestive disorders in buffaloes are related to rumen, reticulum, omasum and abomasum. Acidosis, alkalosis, simple indigestion, tympany and ruminal impaction are related to rumen of buffalo, traumatic reticulitis is related to reticulum and omasal impaction related to omasum (Chaney and Tesfaye, 2012) ^[2], diaphragmatic hernia and slow the rumen motility rate (Watts and Tulley, 2013) ^[18].

Whatever happens in the stomach of a buffalo ultimately the animal will suffer. Apart from stomach disturbance, many other factors play an important role in fore stomach disorder such as pregnancy and calving status, dystocia, fever, abdominal pain, milk production.

Due to fore stomach disorders, not only the health of animals is affected, but the farmer family also has to face economic loss. The present research paper discusses about the role of animal health in fore stomach disorders.

Materials and Methods

During study period a total 2145 buffaloes were screened. These buffaloes were in different age, calving and lacteal status. In screened cases, a total 615 cases were related to digestive disorders and out of these cases, 107 buffaloes were diagnosed with various fore-stomach disorders. A complete present, past and environmental history of affected buffaloes was recorded with respect to breed, season, deworming, vaccination, duration of illness, type of management (open or close confinement).

Results and Discussion

1. Pregnancy status: Out of 107 female buffaloes affected with fore-stomach disorders, 59 were non-pregnant (55.14%) and 48 were in different stage of pregnancy (44.56%), (Table 1).

Corresponding Author:

Sandhya Morwal

Assistant Professor, Department
of Veterinary Medicine (VCC)
College of Veterinary and Animal
Science, Navania, Udaipur,
Rajasthan, India

In pregnant buffaloes, 20.56% were more than 8 months pregnant and 10.28% in 3-6 months pregnant.

It was observed that most of the buffaloes affected with rumen impaction (45.45%) and simple indigestion (42.86%) were in advanced stage of pregnancy. All cases of alkalosis (100%) and traumatic reticulo-peritonitis (77.77%) were non-pregnant. The maximum number of traumatic pericarditis (60.00%) buffaloes were non pregnant and 40% were in various stage of pregnancy.

In case of diaphragmatic hernia, 66.66% of buffaloes were non pregnant and 33.33% were in advanced pregnancy. After just parturition and advanced stage of pregnancy have been

found to be predisposing factor for diaphragmatic hernia (Sharma *et al.*, 2015)^[9].

Total 9/107 buffaloes were diagnosed for traumatic reticuloperitonitis and 7 (77.77%) were non pregnant but recently pretreated and 22.22% in advanced pregnancy. Higher percent of TRP reported in recent pretreated buffaloes (non-pregnant).

It is occur due to increase the size of uterus during advanced pregnancy and push the rumen forward and this condition play important role for penetrating the foreign body in the reticulum Similar finding reported by Singh (2002).

Table 1: The pregnancy status of 107 fore-stomach affected buffaloes

Characteristic	Observations	Number of affected buffaloes									Total
		Simple Indigestion (N=35)	Acidosis (N=18)	Alkalosis (N=4)	Tympany (N=21)	Rumen Impaction (N=11)	Traumatic reticulo-peritonitis (N=9)	Traumatic pericarditis (N=5)	Diaphragmatic hernia (N=3)	Omasal Impaction (N=1)	
Pregnancy Status	Non pregnant	13(37.14)	14(77.77)	04(100.00)	12(57.14)	04(36.36)	07(77.77)	03(60.00)	02(66.66)	00(00)	59(55.14)
	3-6 Month	03(8.57)	02(11.11)	00(00.00)	04(19.05)	02(18.18)	00(00)	00(00)	00(00)	00(00)	11(10.08)
	6-8 Month	07(20.00)	02(11.11)	00(00.00)	04(19.05)	00(00)	00(00)	01(20.00)	00(00)	01(100)	15(14.01)
	> 8	15(42.86)	00(00)	00(00)	01(4.76)	05(45.45)	02(22.22)	01(20.00)	01(33.33)	00(00)	22(20.56)

2. Calving status

Most of the fore stomach disorders were reported in first to third months after calving then fifth month of parturition. Total 38.32% of fore stomach disorders are reported in 1 to 3 month calving stage, 35.51% were reported after 5th month of calving. (Table 2) Common fore-stomach disorders in buffaloes reported after parturition (one to three months), included traumatic pericarditis (60%), alkalosis (50%),

acidosis (44.44%) and simple indigestion (37.14%). The ruminal impaction was found to be 45.45% in fifth or more than fifth lactation months. Similar findings were observed by Hussain and Uppal (2012)^[5]. After calving buffaloes faced the fore stomach problems due to change in diet, increase demands of energy and increase body maintains requirement due to increase the production of milk.

Table 2: The calving status of various fore-stomach disorders in buffaloes

Characteristic	Observations	Number of affected buffaloes									Total
		Simple Indigestion (N=35)	Acidosis (N=18)	Alkalosis (N=4)	Tympany (N=21)	Rumen Impaction (N=11)	Traumatic reticulo-peritonitis (N=9)	Traumatic pericarditis (N=5)	Diaphragmatic hernia (N=3)	Omasal Impaction (N=1)	
Calving Status	1-3 month	13(37.14)	08(44.44)	02(50.00)	07(33.33)	04(36.36)	03(33.33)	03(60)	01(33.33)	00(00)	41(38.32)
	3-5 month	10(28.57)	05(27.78)	02(50.00)	04(19.04)	02(18.18)	03(33.33)	02(40)	00(00)	00(00)	28(26.17)
	> 5 month	12(34.29)	05(27.78)	00(00)	10(47.62)	05(45.45)	03(33.33)	00(00)	02(66.66)	01(100)	38(35.51)

3. History of dystocia

Among the examined buffaloes, only 2.80% buffaloes had a history of difficult parturition (Table 3). There is no

significant relation found between history of dystocia and prevalence of fore-stomach disorders in the present study. Bhutia (2012)^[11] also reported same findings.

Table 3: The history of dystocia in various fore-stomach disorders in buffaloes

Characteristic	Observations	Number of affected buffaloes									Total
		Simple Indigestion (N=35)	Acidosis (N=18)	Alkalosis (N=4)	Tympany (N=21)	Rumen Impaction (N=11)	Traumatic reticulo-peritonitis (N=9)	Traumatic pericarditis (N=5)	Diaphragmatic hernia (N=3)	Omasal Impaction (N=1)	
Dystocia	Yes	00(00)	00(00)	00(00)	01(4.76)	00(00)	01(11.11)	00(00)	01(33.33)	00(00)	03(2.80)
	No	35(100)	18(100)	04(100)	20(95.24)	11(100)	08(88.89)	05(100)	02(66.66)	01(100)	104(97.20)

4. Milk yield

In the present study 79.44% buffaloes were found to be lactating and remaining 20.56% buffaloes were dry. Among the milking buffaloes, 46.73% buffaloes showed a gradual decrease in milk yield, while 32.71% buffaloes showed a sudden drop in milk yield and 20.56% buffaloes were in dry period (Table 4).

Gradual decrease in milk yield was observed in most case of acidosis (77.78%), simple indigestion (48.57%) and tympani

(61.90%). Similar observations were also reported by Singh *et al.* (2003)^[13].

Sudden decrease in milk production was observed in case of traumatic pericarditis (80%), diaphragmatic hernia (66.66%), traumatic reticulo-peritonitis (54.54%) and ruminal impaction (27.27%). Roth and King (1991)^[8] also reported that reduction in milk yield was the most common clinical symptom observed in buffaloes suffering from fore-stomach disorders.

Table 4: The milk yield of various fore-stomach disorders in buffaloes

S. No.	Characteristic	Observations	Number of affected buffaloes									Total
			Simple Indigestion (N=35)	Acidosis (N=18)	Alkalosis (N=4)	Tympany (N=21)	Rumen Impaction (N=11)	Traumatic reticulo-peritonitis (N=9)	Traumatic pericarditis (N=5)	Diaphragmatic hernia (N=3)	Omasal Impaction (N=1)	
	Milk Yield	Gradual Decrease	17(48.57)	14(77.78)	02(50)	12(61.90)	03(27.27)	01(11.11)	00(00)	00(00)	00(00)	50(46.73)
		Sudden Decrease	06(17.14)	04(22.22)	02(50)	07(33.33)	03(27.27)	06(54.54)	04(80)	02(66.66)	01(100)	35(32.71)
		Dry Period	12(34.29)	00(00)	00(00)	01(4.76)	05(45.45)	02(18.18)	01(20)	01(33.33)	00(00)	22(20.56)

5. History of fever

Only 20.56% buffaloes were seen affected by fever in case of fore-stomach disorders. Fever was observed only in buffaloes

affected with traumatic pericarditis (100%) and traumatic reticulo-peritonitis (88.88%) (Table 5). Similar findings were also observed by Smith (2002)^[14] and Shah (2010)^[11].

Table 5: The history of fever in various fore-stomach disorders in buffaloes

S. No.	Characteristic	Observations	Number of affected buffaloes									Total
			Simple Indigestion (N=35)	Acidosis (N=18)	Alkalosis (N=4)	Tympany (N=21)	Rumen Impaction (N=11)	Traumatic reticulo-peritonitis (N=9)	Traumatic pericarditis (N=5)	Diaphragmatic hernia (N=3)	Omasal Impaction (N=1)	
1.	Fever	Present	00	05(27.78)	01(25)	00	02(18.18)	08(88.89)	05(100)	01(33.33)	00	22(20.56)
		Absent	35(100)	13(72.22)	03(75)	21(100)	09(81.81)	01(11.11)	00	02(66.67)	01(100)	85(79.44)

6. Abdominal Pain

Most of the buffaloes (54.20%) showed mild to severe abdominal pain. Abdominal pain was recorded in buffaloes affected with traumatic pericarditis (100%), diaphragmatic hernia (100%), omasal impaction (100%), ruminal impaction (81.82%), traumatic reticulo-peritonitis (77.78%), alkalosis (75%), tympany (71.43%), simple indigestion (28.57%) and acidosis (27.78%) (Table 6). Similar findings were also

observed by Smith (2002)^[14] and Shah (2010)^[11]. The clinical signs of pain like arching back, abducted elbows one and both side, during movement animal feel pain and reluctant movement were observed in buffaloes affected with traumatic reticulo-peritonitis, traumatic pericarditis and diaphragmatic hernia. According to Chakrabarti, 2012^[3], the arching of back and abducted of the elbows occurred due to presence of any foreign bodies in fore-stomach.

Table 6: The history of fever in various fore-stomach disorders in buffaloes

Characteristic	Observations	Number of affected buffaloes									Total
		Simple Indigestion (N=35)	Acidosis (N=18)	Alkalosis (N=4)	Tympany (N=21)	Rumen Impaction (N=11)	Traumatic reticulo-peritonitis (N=9)	Traumatic pericarditis (N=5)	Diaphragmatic hernia (N=3)	Omasal Impaction (N=1)	
Abdominal pain	Present	10(28.57)	05(27.78)	03(75.00)	15(71.43)	09(81.82)	07(77.78)	05(100)	03(100)	01(100)	58(54.20)
	Absent	25(71.43)	13(72.22)	01(25.00)	06(28.57)	02(18.18)	02(28.57)	00(00)	00(00)	00(00)	49(45.79)

7. Tympany

Out of 107 buffaloes affected with various fore-stomach disorders, 87 buffaloes (81.31%) showed tympany, remaining 20 buffaloes (18.69%) did not show tympany (Table 7). Mild, persistent and recurrent tympany was observed in 39.25 percent, 25.23% and 16.82% of buffaloes affected by fore-stomach disorders, respectively.

Mild tympany was more common in cases of acidosis (88.88%), alkalosis (75%), tympany (47.62%), simple indigestion (34.29%) and traumatic reticulo-peritonitis (14.29%) in buffaloes.

Recurrent tympany was mostly observed in cases of omasal impaction (100%), diaphragmatic hernia (66.67%), primary

tympany (23.80%), simple indigestion (22.86%), traumatic pericarditis (20.00%) and traumatic reticulo-peritonitis (14.29%). Persistent tympany was observed in ruminal impaction (81.81%), traumatic pericarditis (80%), diaphragmatic hernia (33.33%), primary tympany (28.57%), alkalosis (25.00%) and acidosis (11.11%) in buffaloes. Similar findings were reported by (Krishnamurthy *et al.*, 1985; Singh *et al.*, 1993; and Saini, 2001)^[4, 12, 10].

According to Tripathi *et al.*, 2010^[16] and Vedpathak *et al.*, 2010^[17], accumulation of indigestible material in the rumen, formation of large amounts of gas and difficulty in eructation play an important role in the recurrent tympany in fore stomach affected buffaloes

Table 7: The history of Tympany in various fore-stomach disorders in buffaloes

Characteristic	Observations	Number of affected buffaloes									Total
		Simple Indigestion (N=35)	Acidosis (N=18)	Alkalosis (N=4)	Tympany (N=21)	Rumen Impaction (N=11)	Traumatic reticulo-peritonitis (N=9)	Traumatic pericarditis (N=5)	Diaphragmatic hernia (N=3)	Omasal Impaction (N=1)	
Tympany	Recurrent	08(22.86)	00(00)	00(00)	05(23.80)	00(00)	01(14.29)	01(20.00)	02(66.67)	01(100)	18(16.82)
	Persistent	00(00)	02(11.11)	01(25.00)	06(28.57)	09(81.81)	04(44.44)	04(80.00)	01(33.33)	00(00)	27(25.23)
	Mild	12(34.29)	16(88.89)	03(75.00)	10(47.62)	00(00)	01(14.29)	00(00)	00(00)	00(00)	42(39.25)
	Absent	15(42.86)	00(00)	00(00)	00(00)	02(18.18)	03(33.33)	00(00)	00(00)	00(00)	20(18.69)

Conclusion

It is concluded that pregnancy play an important role as a predisposing factor in some fore stomach disorders but dystocia is not significant predisposing factor. Sudden

decrease in milk production occurs in cases of traumatic pericarditis, diaphragmatic hernia, traumatic reticulo-peritonitis and ruminal impaction. Fever is a peculiar clinical symptom in case of traumatic pericarditis and traumatic

reticulo-peritonitis. Most of the buffaloes having mild to severe abdominal pain and different type of tympany present in all affected buffaloes but recurrent tympany is an important clinical feature in cases of omasal impaction and diaphragmatic hernia.

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