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Studies on Sharp Foreign Body Syndrome in Iraqi Buffaloes and its Impact on Milk Production

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ABSTRACT

Foreign body syndrome of bovine is still a challenge in veterinary practices all over the world. A total of 1536 buffaloes at Nineveh province, Iraq were examined for foreign body syndrome during two years. Based on case history, clinical examination and ferroscopy, foreign body syndrome was initially suspected and subsequently confirmed through rumenotomy in 338 animals and post mortem examination in 13 buffaloes. Morning, evening and daily milk yields (Liters) before and after the onset of Sharp Foreign Body Syndrome (SFBS) was recorded. Data were displayed and analyzed statistically. Out of 1536 examined buffaloes, 351 buffaloes (22.9%) had foreign body syndrome. The most common clinical signs were varying degrees of anorexia, recurrent rumen tympany and decreased milk yield. The mean morning, evening and daily milk yields before SFBS were 2.9±0.2, 2.6±0.2 and 5.5±0.4 and after SFBS were 0.9±0.1, 0.689±0.1 and 1.58±0.2, respectively. Rumenotomy revealed either sharp foreign bodies, both sharp and blunt foreign bodies or blunt foreign bodies in 259 (76.6%), 70 (20.7%) and 9 (2.7%) buffaloes, respectively. The recorded complications in the examined buffaloes were local reticuloperitonitis (n = 231, 65.8%), reticular abscess (n = 69, 19.7%), diffuse reticuloperitonitis (n = 20, 5.7%), traumatic pericarditis (n = 13, 3.7%), diaphragmatic hernia (n = 6, 1.7%), splenic abscess (n = 3, 0.8%) and absence of complications (n = 9, 2.6%). In conclusion, sharp foreign body syndrome is a common disease in Iraqi buffaloes causing high economic losses and consequently an urgent need for a science based policy is required to control and manage this syndrome.

Key words: Buffaloes, milk, rumenotomy, sharp foreign body syndrome, traumatic pericarditis, traumatic reticuloperitonitis

INTRODUCTION

Buffaloes constitute an important part of livestock agriculture since 5000 years, producing milk, meat, hides and draft power (Nanda and Nakao, 2003).

The buffaloes are the second important species for milk production in the world after cows. The importance of buffaloes is also conferred by a longer longevity, high dry content of milk and a strong organic resistance when compared with cows (Coroian *et al*., 2013).

Sharp foreign body syndrome is also known as “Hardware Disease” or “Traumatic Reticuloperitonitis” when a metal object such as a wire or nail is swallowed and punctures the reticular wall (Mostafa *et al*., 2015).

Foreign body syndrome of bovine is still a challenge in veterinary practices all over the world (Aref and Abdel-Hakiem, 2013; El-Ashker *et al*., 2013; Sileshi *et al*., 2013; Abu-Seida and Al-Abbadi, 2014). The incidence of this disease is high in all developing countries due to bad management, resulting in devastating economic losses (Semieka, 2010). The disease was recorded in 25% of the examined buffaloes in Egypt (Aref and Abdel-Hakiem, 2013) and in 87% of dairy buffaloes and 93% of buffaloes over 2 years of age in India (Sharma and Kumar, 2006).

Ingestion of foreign bodies, either sharp or blunt objects is commonly seen in bovine due to unselective feeding habits (Misk *et al*., 1984). This syndrome results in several clinical signs including; various degrees of inappetence, recurrent rumen tympany and decrease in milk yield.

Various diagnostic methods as metal detector, radiography and ultrasonography were used for diagnosis of this syndrome and its complications in bovine (Braun *et al*., 1993; Abdelaal *et al*., 2009; Mohindroo *et al*., 2010).

Several serious complications were associated with sharp foreign body syndrome such as; local and diffuse peritonitis, diaphragmatic hernia, hepatic, reticular, mediastinal and splenic abscesses, rupture of left gastroepiploic artery and reticultitis (Abouelnasr *et al*., 2012; Nugusu *et al*., 2013).

Although, foreign body syndrome was studied in Iraqi cattle (Misk *et al*., 1984), no available data concerning its incidence in Iraqi buffaloes. Therefore the aims of this study were to record the incidence, common causes and complications of sharp foreign body syndrome in Iraqi buffaloes and to evaluate the impact of this disease on milk yield.

MATERIALS AND METHODS

A total of 1536 buffaloes belonged to 16 herds at Nineveh province, Iraq were examined for foreign body syndrome during two years. Based on case history, clinical examination and ferroscopy, foreign body syndrome was initially suspected and subsequently confirmed through rumenotomy in 338 animals and post mortem examination in 13 buffaloes.

Corresponding animal data such as age, sex and milking season were recorded. In addition, all findings of clinical examination, pain tests, ferroscopy, rumenotomy and post mortem examination were reported.

Morning, evening and daily milk yields (Liters) before and after the onset of sharp foreign body syndrome were recorded.

Rumenotomy was carried out in all diseased buffaloes using Weingarth's ring technique according to (Hofmeyr, 1988). The operation was performed under inverted L regional analgesia using 80 mL of Lidocain hydrochloride 2% solution (Xylocain®, Asefoc, Belgium). All surgical findings were reported. During rumenotomy, rumen magnet was dropped in the reticulum to prevent the recurrence of the SFBS. All buffaloes with traumatic pericarditis were slaughtered and post mortem examination was carried out.

Statistical analysis: Data was displayed as the Mean±SEM. The groups were compared using Independent Sample T-Test in IBM SPSS version 21. ANOVA was applied to compare the effect of milking season on total milk production before and after SFBS. Statistical significance of the parameters was determined in the tests at $p<0.05$.

RESULTS

Out of 1536 examined buffaloes, 351 buffaloes (22.9%) had foreign body syndrome. The mean age of the affected animals was 4.0±0.8 years. The affected animals were 348 (99.1%) females and 3 males (0.9%).

The most common clinical signs were varying degrees of anorexia, recurrent rumen tympany and decreased milk yield.

Clinical examination revealed ruminal atony, positive pain tests in most cases and sometimes slight fever.

Ferroscopy gave positive results in all buffaloes with sharp and blunt metallic foreign bodies and negative results in all buffaloes with sharp and blunt non metallic foreign bodies.

Traumatic pericarditis was reported in 13 buffaloes representing 3.7% of buffaloes suffered from foreign body syndrome. The main clinical signs were congested mucous membranes, abnormal heart sounds, jugular vein congestion and pulsation and edema in the dewlap. Traumatic pericarditis was confirmed by post mortem examination which revealed, enlarged heart, large amount of pericardial pus, pericardial thickening and presence of penetrating sharp foreign bodies (wires and nails).

The mean admission time was 2±0.5 days post onset of hardware disease. In buffaloes suffered from sharp foreign body syndrome, a sharp drop in milk yield was recorded as shown in Table 1.

The milking season had no effect on total milk production before SFBS ($p<0.05$) however, it had significant effect after SFBS (Fig. 1). Rumenotomy revealed either sharp foreign bodies, both sharp and blunt foreign bodies or blunt foreign bodies in 259 (76.6%), 70 (20.7%) and 9 (2.7%) buffaloes respectively.

The recovered foreign objects through rumenotomy were sharp metallic foreign objects in 256 buffaloes (75.7%), mixed foreign bodies in 70 buffaloes (20.7%), blunt non metallic objects in 7 buffaloes (2.1%), sharp non metallic foreign objects in 3 buffaloes (0.9%) and blunt metallic foreign objects in 2 buffaloes (0.6%).

Sharp metallic foreign objects recovered through rumenotomy included a knife, tin openers, wires, nails, needles and pieces of iron. Blunt metallic foreign objects were coins of various sizes.

Table 1: Mean morning, evening and daily milk yields before and after sharp foreign body syndrome

Milk yield (L)	Before SFBS	After SFBS
Mean morning milk yield	2.9±0.2	0.900±0.1
Mean evening milk yield	2.6±0.2	0.689±0.1
Mean daily milk yield	5.5±0.4	1.580±0.2

Data is expressed as Mean±SEM, SFBS: Sharp foreign body syndrome

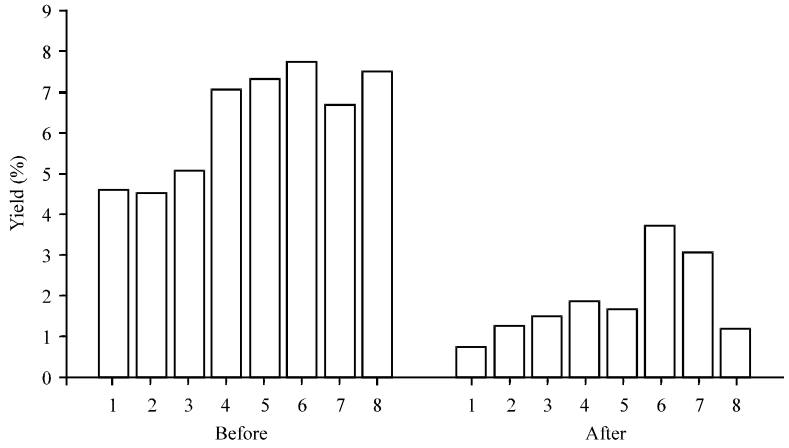

Fig. 1: Effect of milking season on mean total milk production before and after SFBS ($p<0.05$)

Sharp non metallic foreign objects were bones, pieces of glass and feathers. Blunt non metallic objects included; hair balls, electrical wires, nylon ropes, pieces of clothes, socks, rubber pieces, gravels, sand and polyethylene bags.

Blunt foreign bodies were found either in the rumen of 54 buffaloes (68.4%) or in rumen and reticulum of 25 buffaloes (31.6%). Obstruction of the cardia and reticulo-omasal orifice by blunt objects was seen in 5 buffaloes causing recurrent rumen tympany.

Sharp foreign bodies, either metallic or non metallic were partially penetrated the reticular wall in 302 buffaloes (88.3%), freely located in the reticulum in 16 buffaloes (4.7%) or completely penetrated the reticular wall in 24 buffaloes (7%).

Beside 13 buffaloes (3.7%) with traumatic pericarditis, the recorded complications in the operated buffaloes were local reticuloperitonitis in 231 buffaloes (65.8%), reticular abscess in 69 buffaloes (19.7%), diffuse reticuloperitonitis in 20 buffaloes (5.7%), diaphragmatic hernia in 6 buffaloes (1.7%), splenic abscess in 3 buffaloes (0.8%) and absence of complications in 9 buffaloes (2.6%). All treated buffaloes had uneventful recovery and attained their normal milk yield after 3±0.5 days post surgery.

DISCUSSION

Sharp foreign body syndrome is one of the most important diseases in buffaloes and its diagnosis and prevention still a matter for research (Al-Abbadi *et al*., 2014).

In the present study, foreign body syndrome was reported in 22% of the examined buffaloes. This high incidence could be attributed to the shortage of open grass pastures, bad management, unbalanced diets, drinking from rivers shores with swallowing of sand and burning of tires inside the farms during the harvest season. Some of these causes were previously mentioned (Semieka, 2010).

As regards the sex of the affected buffaloes, the syndrome is predominant in females than males. This could be attributed to the early slaughter of buffalo's bulls.

The present study recorded a large numbers of both metallic and non metallic foreign bodies recovered from rumen, reticulum or both. Similar findings were reported in Iraqi cows (Misk *et al*., 1984).

In contrast to Misk *et al*. (1984) who found large amounts of metallic objects in the reticulum of Iraqi cattle causing few cases of reticuloperitonitis, buffaloes with sharp metallic objects developed several complications as local reticuloperitonitis, reticular abscess, diffuse reticuloperitonitis, diaphragmatic hernia, splenic abscess and traumatic pericarditis. This difference could be attributed to the anatomical and physiological differences between cattle and buffaloes. Some of these complications were recorded in cattle and buffaloes (Abouelnasr *et al*., 2012; Balasundara *et al*., 2012; Nugusu *et al*., 2013). In addition, most of these complications had been diagnosed in cattle by ultrasound (Braun *et al*., 1998; Mohamed and Oikawa, 2007).

The recorded complications of SFBS in present study depended upon the sharpness, length, diameter, direction and position of the foreign body inside the reticulum. This is in agreement with the findings of Misk *et al*. (1984) in cattle.

Interestingly, three buffaloes had non metallic sharp objects including, bones, pieces of glass and feathers which causing reticuloperitonitis. Additionally, large amounts of gravels, sand, plastic bags, ropes, clothes, electrical wires and hair balls were recovered from the diseased buffaloes causing localized reticulitis, rumenitis and low rumen-reticular motility with recurrent rumen tympany. Similar findings were mentioned in buffaloes (Abu-Seida and Al-Abbadi, 2014).

It was found that routine rumenotomy was successful for the treatment of most diseased buffaloes except those with huge amount of blunt foreign bodies, a large ruminal wound was required to remove these objects. Similar finding was mentioned by Misk *et al*. (1984).

Regarding the milk yield, sharp foreign body syndrome produced sharp drop on milk production (one third of the normal yield) causing high economic losses. This sharp drop in milk yield resulted from the pain and loss of appetite of the diseased buffaloes. In addition, the cost of diagnosis and treatment and slaughtering or deaths of buffaloes with traumatic pericarditis increase the economic losses caused by this syndrome in buffaloes. In this respect, Orpin and Harwood (2008) and Semieka (2010) mentioned that SFBS results in devastating economic losses.

CONCLUSION

In conclusion, sharp foreign body syndrome is a common disease in Iraqi buffaloes causing several complications and sharp drop in milk yield and consequently an urgent need for a science based policy is required to control and manage this syndrome.

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