

Scientific Report

Displacement of the abomasum to the left side and pyloric obstruction in a goat

Meimandi Parizi, A.^{1*}; Bigham, A.² and Rowshan Ghasrodashti, A.³

¹Department of Clinical Sciences, School of Veterinary Medicine, Shiraz University, Shiraz, Iran; ²Department of Clinical Sciences, School of Veterinary Medicine, University of Shahrekord, Shahrekord, Iran; ³Azad Science and Research University, Fars Branch, Fars, Iran

*Correspondence: A. Meimandi, Department of Clinical Sciences, School of Veterinary Medicine, Shiraz University, Shiraz, Iran. E-mail: meimandi@shirazu.ac.ir

(Received 11 Apr 2006; revised version 10 Jun 2006; accepted 22 Jul 2006)

Summary

A 4-year-old female native goat with the history of inappetence and no defecation was referred to the Department of Clinical Sciences, School of Veterinary Medicine of Shiraz, Shiraz, southern Iran. During exploratory laparotomy, pyloric obstruction and displacement of the abomasum to the left side was observed. Obstruction of pylorus was due to a ball-shaped phytobezoar. The goat was followed and had a good condition one month after the operation. It was concluded that the displacement of the abomasum to the left side has been occurred subsequent to the abomasal obstruction.

Key words: Left displacement abomasum, Pylorus, Obstruction, Phytobezoar, Goat

Introduction

Displacement of the abomasum in goats and sheep has rarely been reported (Gerald *et al.*, 1983; Shakespeare, 1997). It is, however, a well-described entity in dairy cattle. In the recent decade, displacement of the abomasum has become more common in dairy cattle (Van Winden and Kuiper, 2003). In the pathogenesis of the displacement of abomasum, gas accumulation has an important role in the affected cattle. This report describes a goat with pyloric obstruction and displacement of the abomasum to the left side (LDA) with a certain pathophysiology that differs from usual causes of LDA in the cattle.

Case history and surgical operation

A four-year-old female native goat, weighing 50 kg with a history of inappetence and no defecation, presented to the Department of Clinical Sciences School of Veterinary Medicine of Shiraz, Shiraz, southern Iran. The animal showed a mild

depression and physical examination revealed a normal temperature (39.5°C), pulse (85/min) and respiratory rate (22/min). The rumen was however, seemed to be impacted and a weak gastrointestinal movement was audible on auscultation. The abdomen was slightly distended. Based on the history and clinical findings, the primary diagnosis of ruminal impaction or gastrointestinal obstruction was made. The patient was sedated deeply with 0.02 mg/kg xylazine hydrochloride (Rompun 2%, Bayer, Leverkusen, Germany) and electrolyte therapy was performed with saline dextrose and lactated Ringer's solutions at high infusion rates. The goat was placed in right lateral recumbency on the operative table and left flank exploratory laparotomy was performed with local anaesthesia under aseptic condition. During the exploration of the abdominal cavity, distended abomasum was observed between the rumen and the abdominal wall in the left side. In palpation and exploration of the abomasum, pyloric obstruction with a ball-shaped foreign body was detected. The antral aspect of the

abomasum was then incised and the foreign body was removed through the incision. The foreign body was a phytobezoar three cm in diameter. There was no similar foreign body palpable in other parts of the gastrointestinal tract. The incision of the abomasum was sutured in double layers of inverting pattern with synthetic absorbable suture material of 2/0 polyglactin 910 (Vicryl, Ethicon, Edinburg, UK) and pushed to the abdominal cavity and returned to its normal position without applying any method of abomasopexy or omentopexy. The abdominal wall was then closed routinely. The goat was easily coaxed to stand and walked normally.

Post-operative medications included penicillin procaine, 20,000 IU/kg and streptomycin, 20 mg/kg (Nasr Co., Fariman, Iran) for five consecutive days and 2.2 mg/kg flunixin meglumine (Flonex 5%, Razak Lab., Iran) for three days. In follow-up, the goat was observed in a good condition one month after the operation.

Discussion

Displacement of the abomasum is common in cattle, but rarely diagnosed in goats. Clinical signs in this goat were similar to those reported in a goat with LDA (Gerald *et al.*, 1983). In that case, the disease was not diagnosed by physical examination. It is possible that displacement of the abomasum in goats is not readily diagnosed by clinical examination, especially by simultaneous percussion and auscultation.

In the pathogenesis of the displacement of abomasums, the accumulation of gas in the abomasum is very important. The underlying hypothetical cause of this accumulation is a combination of two pathways: an increased gas production in the abomasum and a hypomotility of the abomasum. In a normal functioning abomasum, the gas production is equal to its clearance in oral or aboral direction. When motility of the abomasum is inadequate, accumulation of gas may occur. The vagus nerve plays a predominant role in abomasal motility (Cottrell and Stanley, 1992; Cottrell, 1994; Geishauer *et al.*, 1998). Besides, the effect of the vagal nerve, large amounts of volatile

fatty acids (VFA) in the rumen and abomasum (Svendsen, 1970; Poulsen and Jones, 1974; Vlaminc *et al.*, 1984; Gregory and Miller, 1989), endotoxins (Vandeplassche *et al.*, 1984; Vlaminc *et al.*, 1984), metabolic alkalosis (Poulsen and Jones, 1974) and low blood calcium levels (Madison and Troutt, 1988) are mentioned as plausible causes for decreasing motility. In a post-partum cow one or both mechanisms—hypomotility and gas production—can play a role, resulting in accumulation of gas and atony of the abomasum.

In the case presented here, none of the above gas accumulating mechanisms were noted in the history and clinical findings. But, we observed pyloric obstruction with a phytobezoar that could be the cause of gas accumulation and hypomotility in the abomasum and its consequent displacement. In goats, phytobezoars form due to grazing of grassland/brush forage that contains a high percentage of awns which their sizes can differ from 2–10 cm in diameter and can produce gastrointestinal obstruction (Sherman, 1981; Haskell, 2004).

The aims of surgery for correction of LDA in cattle are to return the abomasum to its normal position and create a permanent attachment in the position on the ventral floor to prevent recurrence. But in this case, no method of abomasopexy or omentopexy was applied. The primary cause of LDA in this goat was probably obstruction of the pylorus. After correcting the obstruction, fixation of the abomasum to the abdominal wall seemed not to be necessary. It was concluded that the distension and hypomotility of the abomasum due to pyloric obstruction has been a predisposing factor for atony and displacement of the abomasums to the left side in the affected goat.

References

- Cottrell, DF (1994). Vagal reflex inhibition of the motility in the abomasal body of sheep by antral and duodenal tension receptors. *Vet. Res. Commun.*, 18: 319-330.
- Cottrell, DF and Stanley, HG (1992). An excitatory body-antral reflex in the sheep abomasums. *Exp. Physiol.*, 77: 565-574.
- Geishauer, T; Reiche, D and Schemann, M

- (1998). In vitro motility disorders associated with displaced abomasum in dairy cows. *Neurogastroenterol. Motil.*, 10: 395-401.
- Gerald, AW; Thurston, D and Ronald, FM (1983). Left displacement of the abomasum in a goat. *Vet. Med. Small Anim. Clin.*, 78: 1919-1921.
- Gregory, PC and Miller, SJ (1989). Influence of duodenal digesta composition on abomasal outflow, motility and small intestinal transit time in sheep. *J. Physiol.*, 413: 415-431.
- Haskell, SRR (2004). Surgery of the sheep and goat digestive system. In: Fubini, SL and Ducharme, NG (Eds.), *Farma animal surgery*. (1st. Edn.), Saunders Co., PP: 521-526.
- Madison, JB and Troutt, HF (1988). Effects of hypocalcaemia on abomasal motility. *Res. Vet. Sci.*, 44: 264-266.
- Poulsen, JSD and Jones, BEV (1974). The influence of metabolic alkalosis and other factors on the abomasal emptying rates in goats and cows. *Nord. Vet. Med.*, 26: 22-30.
- Shakespeare, A (1997). Left displacement of abomasum in sheep. *Vet. Rec.*, 141: 527-528.
- Sherman, DM (1981). Doudenal obstruction by a phytobezoar in a goat. *JAVMA*, 178: 139-140.
- Svendsen, P (1970). Abomasal displacement in cattle. The concentrations of volatile fatty acids in ruminal and abomasal contents and their influence on abomasal motility and the flow rate of abomasal contents. *Nord. Vet. Med.*, 22: 571-577.
- Vandeplassche, G; Claeys, M; Oyaert, W and Houvenaghel, A (1984). Influence of prostaglandins on bovine abomasum: biosynthesis and in vitro motility experiments. *Prosta. Leukotr. Med.*, 14: 15-24.
- Van Winden, SCL and Kuiper, R (2003). Left displacement of the abomasum in dairy cattle: recent developments in epidemiological and etiological aspects. *Vet. Res.*, 34: 47-56.
- Vlaminck, K; Van Den Hende, C; Oyaert, W and Muylle, E (1984). Studies of abomasal emptying in cattle. II. Effect of infusions in duodenum and abomasum on electromyographic complexes, pressure changes and emptying of the abomasums. *J. Vet. Med.*, 31(A): 676.