

AN ALTERNATIVE TREATMENT APPROACH FOR GANGRENOUS MASTITIS IN DAIRY GOATS: A CASE REPORT

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Introduction

Gangrenous mastitis in goats is a severe clinical inflammatory process in mammary glands. Clinical signs commonly occur in the first weeks of lactation, committing one or two sides of the glands and are characterized by fever, anorexia, dyspnoea and other systemic signs of toxemia. Initially, the udder is warm, painful and swollen with a watery secretion, containing flocculent pus and/or blood. Eventually the udder becomes discoloured (blue-blackish or blue-greenish), cold, with a demarcation of the affected tissue. A fatal clinical course is characterized by worsening of corporal condition, pneumonia, septicemia and/or toxemia. Usually, gangrenous mastitis is associated with *Staphylococcus aureus* or *Clostridium perfringens* infections (Anderson *et al.*, 2005). *Staph. aureus* produces the alpha toxin, a potent vasoconstrictor that is thought to be involved in the pathogenesis of gangrenous mastitis (Anderson *et al.*, 2005).

Conventional treatment involves antimicrobial and anti-inflammatory drugs complemented with fluid therapy, surgical drainage and debridement of necrotic tissue (Cable *et al.*, 2004). Brewer (1963) has described a method using ligation of mammary vessels for gangrenous mastitis cases in goats.

In the Veterinary Large Animal Teaching Hospital, the usual practice is to use vigorous medical therapy only and there has been only one successful case of recovery in per-acute gangrenous mastitis (Senarathne *et al.*, 2007). Therefore the aim of this study was to introduce an alternative treatment method in order to prevent death of per-acute gangrenous mastitic goats.

Materials and Methods

A five-year-old female Saanen doe was referred to the Veterinary Large Animal Teaching Hospital just two days after kidding two kids in her sixth parity, with a complaint of a sudden onset of inappetence and recumbency. At the time of presentation the left half of the udder was bluish-purple with a marked demarcation line of the affected tissue, the gland was cold to touch and the mammary secretion contained blood and pus. A little milk without any apparent change could be withdrawn from the unaffected right half. The animal was terminally ill and the clinical examination revealed that the animal had tachypnoea and tachycardia. The condition was diagnosed as per-acute gangrenous mastitis and a blood sample was submitted for hematological tests. A sample from the affected half was collected aseptically into a sterile container for bacterial isolation and

identification and also for Antibiotic Sensitivity Test (ABST). Milk from the unaffected half was negative for California Mastitis Test (CMT) indicating that there was no subclinical mastitis in that half. Prompt treatment was initiated with intravenous normal saline (0.9% NaCl) drip, dexamethasone 80µg/ kg BW q. 12h (Colvasone 2%; Norbrook), penicillin + streptomycin (Medco Esp. Ltd; Holland) and tetanus toxoid 40 IU I/M. Stripping of the affected half was carried out hourly whereas the unaffected half was prophylactically infused with an intramammary preparation of procaine penicillin + streptomycin + neomycin + prednisolone (Multiject; Norbrook) q. 24h for 3 days.

Since there was no favorable response even 5 hours after the vigorous medical treatment, surgical intervention was planned to ligate the left external pudendal blood vessels which supply the left half. The animal was placed on right lateral recumbency and the affected left side of the udder was prepared aseptically. The doe was sedated with 2% xylazine HCl (Ilium) 0.1mg/kg I/M and Lignocaine HCl (1.5. ml) was infiltrated over the inguinal area. A 10-15 cm long incision was made parallel to the external inguinal ring and the external pudendal vessels were located using blunt dissection of superficial fascia at the point where they come out from the external inguinal canal. Both artery and veins were triple ligated and transected with a double ligation on the cardiac side and a single ligation on the mammary side. The subcutaneous tissues and the skin incision were closed routinely.

Thereafter the teat of the affected left half was amputated at its base using an emasculator.

Postoperative care was continued with systemic antibiotics and drainage of the udder until the mammary tissue sloughed off and then managed as an open wound. Wound dressing was continued with a mixture of 'Negasunt' powder (Bayer) and povidone iodine. Supportive treatment (Multivit; Dutch farm and Catasol; Bayer) was instituted daily for the initial 3 days.

Results

The following morning the animal showed a marked improvement. She was in standing position and had started to eat. All the mentioned clinical parameters had become normal. Wound debridement and dressing was done with povidone iodine and 'Negasunt' powder and parenteral procaine penicillin + streptomycin was continued daily for 10 days to enhance the wound healing. It took one month for complete healing of the wound. The causative organism was identified as the *Staph. aureus* which was sensitive to gentamicin, streptomycin and tetracycline and resistant to potentiated sulphonamides and amoxycillin.

Discussion

Diagnosis of gangrenous mastitis is quite straightforward and initial treatment must be commenced promptly. The main therapeutic objective is to prevent endotoxaemic shock and stabilize the animal thereby preventing a fatal outcome. Intensive fluid therapy with glucocorticoids and antibiotics should be administered

promptly. Until culture and ABST results are obtained, an appropriate antibiotic should be selected for possible causative organisms.

In gangrenous mastitis cases, the major clinical manifestations are due to absorption of toxins in to the systems. The surgical ligation of external pudendal vessels prevents further absorption of toxins thereby preventing further clinical deterioration due to septicaemia and is mainly used to treat severe, life threatening gangrenous mastitis cases in ruminants with septic shock where the animal's cardiovascular status prevents surgery (Susan *et al*, 2004). Surgical ligation of the mammary vessels eventually leads to atrophy of the affected mammary gland and this is also more effective in small ruminants whose major blood supply is from the external pudendal artery. Surgical ligation of the mammary vessels is much less invasive than a mastectomy, with minimum blood loss, and is therefore preferable to udder amputation in a very sick animal (Susan *et al*, 2004). Besides, in cases of unilateral infection of the udder, the non affected quarter can be salvaged thereby preserving the future productivity of the animal.

The prolonged recovery time, the need for daily wound dressing, self

mutilation of the wound and the high cost of treatment may limit the practical use of this procedure for goats under Sri Lankan field conditions. However, the cost can be justified for valuable breeding stock and this would be a successful and feasible treatment option for terminal stage patients with per-acute gangrenous mastitis.

References

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