



SHORT COMMUNICATION

BILATERAL MASTECTOMY FOR SUCCESSFUL MANAGEMENT OF ACUTE GANGRENOUS MASTITIS IN A JAMUNAPARI DOE (*CAPRA HIRCUS*) 2 CASES

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ABSTRACT

Gangrenous mastitis is rare in female goat specially three days after kidding which has the criteria of difficult correction and management in a poor family. Referred by local quack three years old Jamunapari female goat was presented at SAQTVH with the complaint of large swelling of udder and the milk not coming from the teat. From 1st day of kidding the udder was painful to touch. We observed right quarter of the doe had swelling of 7.25 cm in diameter and was cold upon touch. The milk from the affected quarter was red-black in color, and the skin of the quarter was indurate with gangrenous red-black discoloration. Pre-operative routine blood examination and identification of associated bacterial agent; two bacteria namely *Staphylococcus aureus* and *Escherichia coli* were isolated from the milk sample. The surgical site was cleaned and disinfected and the patient was stabilized with fluid therapy. After sedation left lateral recumbency was achieved using high epidural anesthesia. Ring block was done with 2% lidocaine hydrochloride dosed at 20 ml. Bleeding was managed by ligation, electric cauterizer and artery forceps. Mastectomy was performed by removing affected quarter along with other gangrenous tissue and muscles. After removal an extra covering of skin, the final closure was done by walking suture inside and skin with non-absorbable one performed by using sterilized silk (size-2) with a horizontal mattress pattern. The tissue was sent to a pathology lab for histopathological investigation. Proper post-operative care with antibiotic and analgesic therapy was maintained for next five days. This gangrenous mastitis case was successfully corrected only through surgical approach.

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INTRODUCTION

Bangladesh is one of the densely populated countries (1015 people per square km) of the world with a population of 149.772 million people within the area of 147570 square km (BBS, 2015). At present total goat population, which is known as poor man's cow in Bangladesh is 14.8 million (Division of Livestock Statistics, 2016). Goat farmers face many problems during rearing goats. Mastitis is a significant economic disease of poor man's cow in this country along with other countries in Asia due to the significant economic losses and harsh public health implications it poses (Koop et al., 2016). "Mastitis" means the inflammation of accessory sex gland in a female,

which may occur due to any bacterial infection secondary to teat injury or poor management (Marogna et al., 2012). Mastitis has mainly clinical and subclinical categories (White, 2007). Contamination of the microorganisms primarily occurs by ascendant via in canal of teats. It has zoonotic significance as well (Anderson et al., 2005). *Staphylococcus aureus* is well-known as the most repeated primary agent of goat mastitis and incidentally *Mannheimia (Pasteurella) haemolytica*, *Escherichia coli*, *Clostridium perfringens*, *Streptococcus* spp, *Pseudomonas* spp and *Nocardia* spp (Sarker et al., 2015; Bergonier et al., 2003; Radostits et al., 2007). Gangrenous mastitis is one of the worst forms of mastitis to be managed in clinical based treatment whereas in very severe cases, the gangrene may lead to toxemia and loss of animal life (Ribeiro et al., 2007). The occurrence of clinical mastitis in goats has been reported very low, but severe (Abba et al., 2014). This was monitoring, especially in cases of gangrenous mastitis which may be lethal and in most cases leads to a mastectomy

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of the affected quarter in the event the goat survived (Koop *et al.*, 2016). Ecological and geographical locality may enhance the type and the frequency of isolation of organisms causing mastitis in animals (Gomes *et al.*, 2014, Sarker *et al.*, 2015). Gangrenous mastitis forms pathologic change in the tissues of the mammary gland as well as varying degree of abnormal in the physical and chemical properties of the milk (Sarker *et al.*, 2015) The disease has a sing and symptoms like anorexia, dyspnea, fever and systemic involvement. At the beginning stage, the udder feels hot to touch and painful as well as swollen. Milk becomes watery, purulent or with a tinge of blood. Severe cases are characterized by corporal condition, septicemia, toxemia, and pneumonia (Ribeiro *et al.*, 2007). Diagnosis of mastitis is a ponderous work and can be done by California Mastitis Test and Somatic Cell Counts. Besides, bacteriological isolation and PCR identification can be done (Paterna *et al.*, 2014). The importance of judgment and treatment of mastitis in small ruminants is undeniably important for monetary, artistic and welfare points of view. This clinical case report describes the surgical management of unilateral fetid mastitis in a doe caused by *S. aureus* and *E. coli* mixed infectivity. Treatment involves antimicrobial and anti-inflammatory drugs as well as fluid therapy, surgical drainage, degradation and demotion of necrosis tissue (Cable *et al.*, 2004). The present report describes an unusual case of combined infection by *E.coli* and *S.aureus* isolated from gangrenous mastitis with histopathological changes in goat.

Case history and observation

A 3 and 4 years old weighing 32,35 kg Jamunapari doe 4 and 10 days after kidding was admitted to the Teaching Veterinary Hospital (TVH) of Chittagong Veterinary and Animal Sciences University, Chittagong, Bangladesh. The doe had a history of normal appetite and stopped milking for 4 days and treatment was given by local quack.

Physical examination

Examination of the doe revealed as rectal temperature 104.5°F, heart rate 86/min, respiratory rate 25/min and slightly pale mucous membrane. The right quarter of the doe had swelling of 7.25 cm in diameter and was cold upon touch. The milk from the affected quarter was red-black in color and the skin of the quarter was indurate with gangrenous red black discoloration (Figure). 1

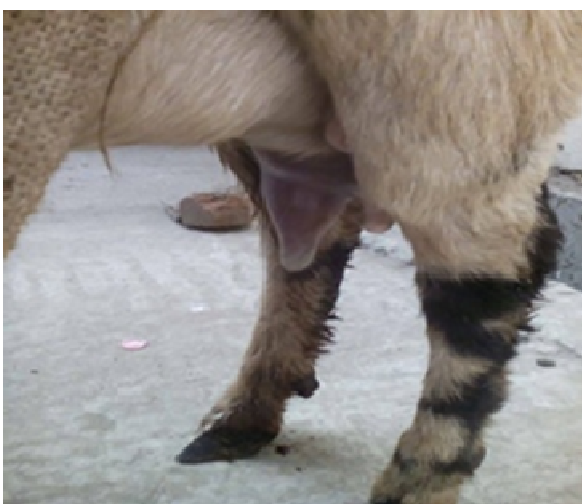


Fig.1. Physical examination





Fig.2. Surgical techniques



Post operative follow up. After 3 months

Surgical procedure

The doe was controlled by left lateral recumbency with epidural anesthesia (last sacral and first coccygeal vertebrae) using 2% solution of Lidocaine HCl dosed at 6 ml (Inj. Jasocaine® 2%). Ring block was also done locally with 2% Lidocaine dosed at 20 ml. Antiseptic washing was done properly. About 6-7 cm skin incision at the border of the affected right quarter was performed. Pudental artery was crashed by artery forceps and ligated using catgut to stop bleeding and subsequently bleeding from other minor mammary vessels was managed with the help of electric cauterizer. Then affected quarter was removed and the area was sprayed by 0.5% Metronidazole saline to protect the secondary bacterial infection. Finally after mastectomy, the skin was closed with proper apposition and normal skin tension. It was confirmed that there was no more gangrenous or dead tissue inside the suture (Figure 2,3 and 4). The mass was surgically excised, fixed in 10% neutral buffered formalin, and sent to the Diagnostic and Investigational Laboratory at The Department of Pathology and Parasitology of CVASU for routine histopathological examination.

Laboratory diagnosis

Biochemical assessment of blood showed that serum calcium and phosphorus levels were 8.25mg/dL and 7.30 mg/dL and other parameters were remained within physiological series. Total clinical parameters were within the normal and the animal was having normal appetite. Mild fibrotic steadiness of mammary gland was felt without yielding any pain on palpation. Hematology exposed lower level of hemoglobin (8g/dL) and normal total leukocyte count (9300/cmm) along with relative neutrophilia (72%). Afterward isolation of associated bacteria was performed by culturing on blood agar, MacConkey agar and Mannitol salt agar as explained by Chandrasekaran *et al.*, (2014). *E. coli* and *S. aureus* were identified based on colony morphology, staining properties and biochemical analysis. Cultural sensitivity (CS) test was performed using commonly used antibiotic discs as per the procedure described by Begum *et al.*, (2007). In antimicrobial sensitivity test only ceftiaxone and ciprofloxacin were found to be highly sensitive, gentamycin oxytetracycline, sulphatrimithoprim and azrithomycin were shown intermediate resistance and amoxicillin was resistant.

Histopathology

In histopathology, the subcutaneous connective tissue and the interlobular septa were grossly edematous and liquefied mass

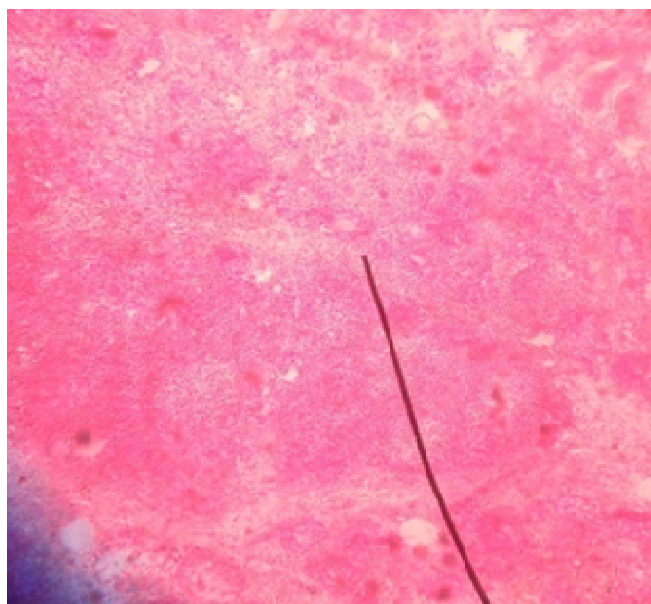


Fig.3. Histopathology

also present. Admixture of coagulation and liquefaction necrosis was found with infiltration of large amount of reactive cell.

Post Operative care and Management

As post-operative care, ciprofloxacin (Inj. Cipo-A vet®, SK-F Bangladesh, 30 ml vial, 10% solution) dosed at 10 mg/kg body wt based on culture sensitivity test, Ketoprofen (Inj. Keto vet, Squire Bangladesh, 10 ml vial, 10% solution) dosed at 3.3 mg/kg body wt and pheneraminemeleate (Inj. Alerin, SK-F Bangladesh, 10 ml vial, 22.75 mg/ml) dosed at 1 mg/kg body wt were administered intramuscularly for seven days. Follow-up observation revealed normal milk secreting and feeding after 7 days of operation. Complete recovery with proper healing was found after 120 days of operation without any complications.

DISCUSSION

The prevalence of subclinical mastitis alone in goats in many regions of the world was reported to range between 9-50% (Zhao *et al.*, 2015). In mastitis, there occurs a complete destruction of all involved tissues. The affected gland may initially appear hyperemic and warm and then progresses to cyanotic and cold. The secreted milk may appear straw colored or serum-like with a tinge of blood and mixed gas. In addition, the animal may be recumbent and fatality can reach up to about 30-40% if left untreated (Sarker *et al.*, 2015; White, 2007). Gross changes of the affected side of the udder was enlarged and swollen and showed a purplish to black skin discoloration. In wide-ranging, antibiotics don't give satisfactory result as they don't reach to the affected tissue. As a result development of gangrene processes (Davis, 2014). It should be kept in mind that treatment before CS test plays an important role to use antibiotic to get rid from septicemia. If medical management fails then surgical intervention may be the best option to manage the case (Davis, 2014). Surgical management was found more effective on gangrenous mastitis of my study in accordance with several other case reports (Ribeiro *et al.*, 2007; Yeshwantkumar and Nirmala, 2008; Pal *et al.*, 2011; Sarker *et al.*; Jesse *et al.*, 2016).

Conclusion

The prognosis of gangrenous mastitis in goat is not favorable as septicemia may develop. Success depends on early treatment with appropriate antibiotics based on cultural sensitivity test and proper supportive therapy. Surgery may be the alternative option to save the patient.

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Authors contribution: Bhajan Chandra das and saroj kumar is surgeon, saroj kumar, Ferdoshe Akter and Tanjila Hasan prepare manuscript, Dragana Crnomarkovic and prepare pathology section and correction of manuscript.

Competing interests: The authors declare that they have no competing interests.

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