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SURGICAL MANAGEMENT OF FIBROADENOMA IN UDDER WITH SPECIAL REFERENCE TO ULTRASONOGRAPHIC AND HISTOPATHOLOGICAL FINDINGS IN THREE JAFFARABADI BUFFALO HEIFERS

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ABSTRACT

The present report describes a surgical management of fibroadenoma in udder of three Jaffarabadi buffalo heifers of 2-3 years of age. The history of firm udder mass increasing gradually since last 5-6 months. Ultrasonography revealed a mass with isoechoic to hyperechoic parenchyma, separated from surrounding tissue by well differentiated hypoechoic margin. Under sedation and local analgesia, homogenous mass was removed surgically in lateral recumbency. All animals had a postoperative recovery without any complications. Grossly, mass was pale, firm, encapsulated and fasciculated. On histology, tubules and acini lined by layers of cuboidal epithelium and separated by bands of fibrous connective tissue. On the basis of history, clinical findings, ultrasonography and histopathology; these cases were diagnosed as fibroadenoma.

Keywords: *Bubalus bubalis*, buffaloes, fibroadenoma, Jaffarabadi heifer, mammary gland, ultrasonography

INTRODUCTION

The incidence of mammary tumours varies greatly among animal species, but canines and felines are the most commonly affected domestic species (Moe, 2001). Proliferative changes in the mammary gland are rarely observed and very few reports are available in farm animals. However, mammary tumors have been recorded sporadically in various species of domestic animals (Annapurna *et al*., 2003; Brito *et al*., 2008; Joshi *et al*., 1994; El-Shafaey and Hamed, 2017). Diagnosis of mammary gland affections is quite difficult as different types of swellings with similar clinical presentations require the use of ultrasonography and other ancillary tests for confirmatory diagnosis (El-Shafaey and Hamed, 2017). The present study describes the outcome of the clinical, ultrasonographic and histopathological examinations of three cases mammary fibroadenoma in Jaffarabadi buffalo heifers along with subsequent decision making for its successful surgical management.

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MATERIALS AND METHODS

Animals

Three Jaffarabadi buffalo heifers, about 2 to 3 years of age were presented to Veterinary Clinical Complex (VCC), with a history of large diffuse movable mass increasing gradually since last 5 to 6 months. Animals were not responding to routine medical management. Clinically, rectal temperature, other vital parameters and superficial regional lymph nodes were apparently normal in all animals. Physical examination revealed hard movable mass in right rear quarter of two animals and left rear quarter of one animal (Figure 1).

Ultrasonography (USG)

For diagnosis the condition, ultrasonography was performed using an Exago portable ultrasound machine after shaving and removing excess oil over the skin. Acoustic gel was applied over mass and examined using a 3.5 MHz convex transducer.

Surgical Management

For surgery, feed and water intake withheld for 24 and 12 h, respectively. One hour prior to surgery, intravenously (IV) 10 mg/kg ceftrioxone and intramuscular (IM) 0.5 mg/kg meloxicam were administered. Injection of 0.05 mg/kg xylazine hydrochloride (IV) was given for sedation and animals were restrained in lateral recumbency. For local analgesia around the operation site, lignocaine hydrochloride (2%) infiltrated and an aseptic solution applied to prepare a site for surgery. An incision using aseptic blade is made over the mass longitudinally. Blunt dissection was carried out to separate the mass from surrounding tissue and to remove the entire mass without damage to vascular supply (Figure 2). Ceftrioxone (10 mg/kg, IV, once daily) continued for 5 days postoperative to prevent secondary bacterial infection at the operation site along with meloxicam (0.2 mg/kg, IM, once daily) for three days for pain relief. Surgical wounds were daily dressed in 5% povidine iodine solution to prevent further infection for a week. Skin sutures were removed on day 12 postoperative. All animals recovered well without any further complications, suggested surgical removal of fibroadenoma is safe, economic and feasible in field condition (Figure 3).

Histopathology

Tissue samples were collected in 10% neutral buffered formalin solution for fixation. After proper fixation of 48 h, these samples were kept in different grades of alcohols for dehydration, xylene for clearing and finally for paraffin embedding to make blocks. Sections of 5 µ thicknesses were cut and stained using haematoxylin and eosin (H and E) stain for histopathology (Luna, 1968).

RESULTS AND DISCUSSIONS

The present study described diagnosis of three cases of fibroadenoma in buffalo heifers by ultrasonography and its confirmation through histopathology with successful surgical management. Very few reports were published on fibroadenoma of mammary gland in buffalo. Previous studies reported 0.25 to 0.5% incidence of mammary fibroadenoma in buffalo among bovine tumors (Annapurna *et al*., 2003; Joshi *et al*., 1994; de Sant'Ana *et al*., 2014; El-Shafaey and Hamed, 2017). Lower incidence of fibroadenoma and mammary tumour in bovine as compared to canines and felines, may be due to unknown risk factors and/or development mechanism and biological behavior of tumours, but are still not

Figure 1. Spherical mass on right rear quarter of udder.

Figure 2. Surgically removed growth: Pale, firm, encapsulated and fasciculated mass weighed about 8.5 kg.

Figure 3. Animal recovered without any complications after surgery.

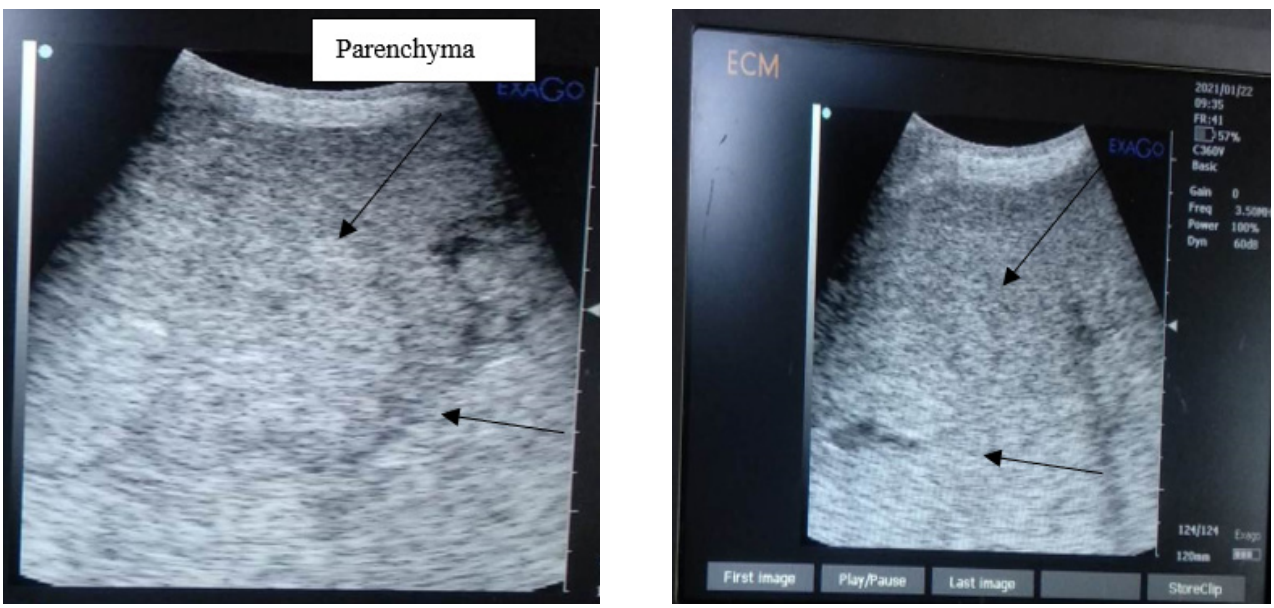

Figure 4. Ultrasonography revealed mass with isoechoic to hyperechoic parenchyma with well differentiated hypoechoic margin.

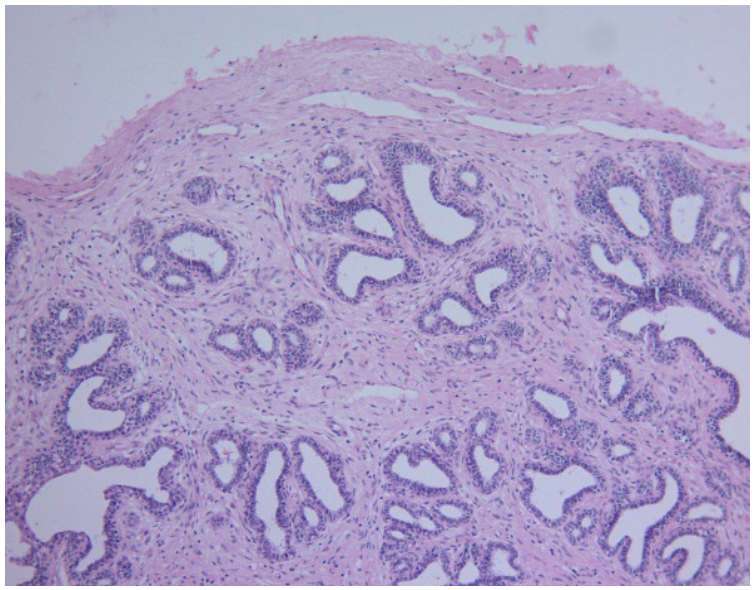

Figure 5. Mammary gland: well capsulated mass with proliferation tubuloacinar structures (H&E x 100).

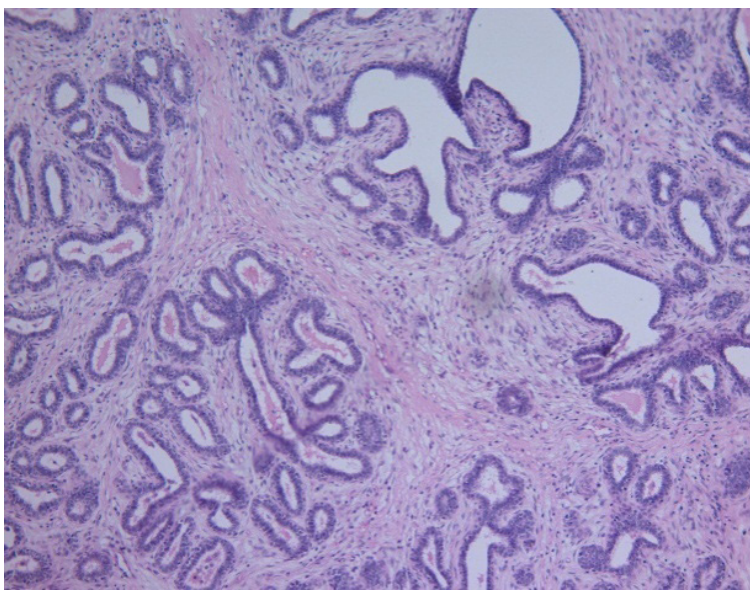

Figure 6. Mammary gland: Tubules and acini were lined with single or multilayers of cuboidal epithelial cells and separated with the bands of fibrous connective tissue. (H&E x 100).

known. Hormone is key factor for development of mammary tumour however bovine mammary tumour incidence is lower may be due to increase pregnancy rate causing increased parity shortens estrogen influence and increase lactation demands give protection against mammary tumours (Mihevc and Dovc, 2013). Diagnosis of mammary gland affections only by case history, physical and clinical examinations are sometimes difficult and necessitates the use of additional diagnostic techniques like ultrasonography for confirmation and successful surgical management (El-Shafaey and Hamed, 2017). The USG in the transverse plane revealed a round mass with isoechoic to hyperechoic parenchyma, well differentiated from surrounding tissue by hypoechoic margin (Figure 4). As reported by Mina *et al*. (1994), surgical removal of mass was effective, feasible and economic in cases of fibroadenoma in heifers. Grossly, pale pink, firm, encapsulated and fasciculated as also observed by Raval *et al.* (2015), and with the weight of surgical removed masses was around 8.5 kg in one of the heifers. Histologically, the mass was encapsulated and well lobulated composed of tubuloacinar structures separated by bands of fibrous connective tissue. (Figure 5). The acini and tubules are lined by a single or multiple layers of cuboidal cells. The nucleus was normal with the absence of cellular atypia. Widening of lumen and the presence of homogenous, eosinophillic material also seen in some of the tubules. There was marked intra and inter lobular proliferation of fibrous connective tissue was evident (Figure 6). Cassali *et al.* (2011) also reported epithelial hyperplasia with interlobular fibrous stroma. However, irregular, branched, dilated tubules, well-differentiated acini, mild pleomorphism were also observed in case of udder fibroadenoma (El-Shafaey and Hamed, 2017).

CONCLUSION

The outcome of these cases suggested that surgical removal of fibroadenoma after accurate diagnosis is safe, economic and feasible under field conditions.

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