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Successful surgical management of antibioma in a cow

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Abstract
An 8-year-old female cow was presented to the surgery unit of veterinary clinical complex, college of veterinary science, Rajendranagar, Hyderabad, with the history of swelling near the left lower jaw, inappetence and unable to chew but able to drink water for the last 25days. Clinical examination revealed hard mass with pain on palpation in between jugular vein and submandibular lymph node. Both conjunctival and buccal mucous membrane were pale and moist. On FNAC evaluation revealed numerous neutrophils which was suggestive of bacterial infection. Hematology, hepatic and renal function tests were assessed prior to surgery. Asurgical procedure was performed just below the bifurcation of jugular vein at submandibular lymph node region to remove antibioma along with capsule. Antibiotic sensitivity test was performed and treatment was formulated with antibiotics (gentamycin in combination with ceftriaxone), NSAID (meloxicam), and iron supplements. The animal recovered uneventfully.

Keywords: Antibioma-cow-surgical management-antibiotics, FNAC- fine needle aspiration cytology

Introduction
An antibioma is a tough-walled abscess that typically develops as a result of insufficient or non-existent pus drainage during an infection and improper antibiotic administration on the patient (Jain *et al*., 2023) [7]. Antibioma is a painful or painless swelling, intermittent fever and associated symptoms. The head was most commonly affected region (80.36%), followed by gluteal and neck (10.71%) and chest region (8.92%) in cattle (Yong Kh *et al*., 2012) [13]. It is a known fact that improper use of antibiotics during development cannot be avoided, due of the accessibility of over-the-counter medications, quacks and animal owners frequently misuse them and advise inappropriate antibiotic use (Singh Harneet *et al.*, 2017) [4]. Development of abscess in the mandibular region was not common. It may developed due to injury to the buccal mucosa by sharp grasses during feeding that led to the entry of pathogens and development of abscess (Connor., 2005) [2]. Incidence of subcutaneous abscess in cattle, out of 56 samples, 53 samples were gram positive bacteria. They were in the following percentages: *Staphylococcus aureus* (33.90%), *Staphylococcus epidermidis* (17.80%), *Staphylococcus hycus* (12.60%), and *Arcanobacterium pyogenes* (26%) (Yong Kh *et al.*, 2012) [13]. *Pseudomonas aeruginosa* first time isolated from abscesses in cattle of Bangladesh (Hossain *et al.*, 2013) [5]. Most common causative organisms found in abscess were *Streptococcus*, *Staphylococcus*, *Corynebacterium* spp, *E. coli*, *Pseudomonas aeruginosa*, *Actinomyces bovis* and *Actinobacillus lignieresii*. Prolonged antibiotic treatment can result in chronic inflammatory mass (Antibioma). Incision and drainage on dependent part of the abscess, flushing with 2% hydrogen peroxide, irrigation with 1:1200 potassium permanganate solution and insertion of bandage soaked in tincture iodine inside the abscess cavity (Munish 2010) [10]. Surgical excision of large abscess in one year old, male buffalo under local analgesia with 2% lidocaine hydrochloride and xylazine hydrochloride at the dose rate of 0.1mg/kg body weight had good outcome (Hussein 2012) [6].

Materials and Methods
An eight-year-old indigenous female cow was referred to the Veterinary clinical complex, College of Veterinary Science, Rajendranagar, Hyderabad. Animal showed clinical signs of swelling near the left lower jaw (figure i), and subsidiary complaint with in appetence and unable to chew but able to drink water from last 25days.On clinical examination of cow revealed that the normal rectal temperature ranging from99.6^{o}F to 100.1^{O}F, heart rate@ 69 bpm (beats per minute), skin skin tenting time was 3 seconds, both buccal & conjunctival mucous membranes were pale.

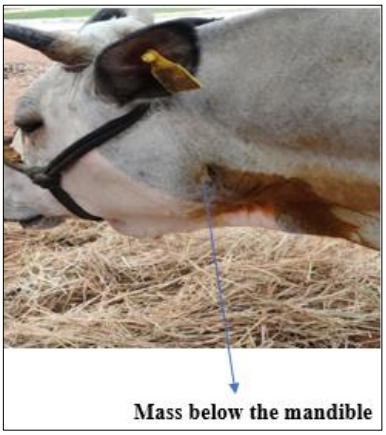


Fig 1: An eight-year-old indigenous female cow with swelling near the left lower jaw

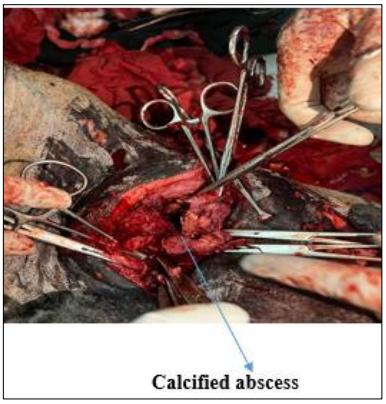


Fig 2: Visible calcification onantibioma

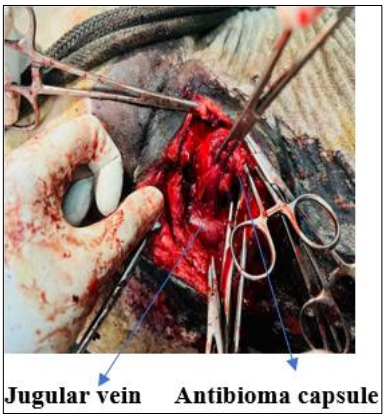


Fig 3: Blunt dissection of antibioma

Fig 4: Removal of antibioma along with the capsule

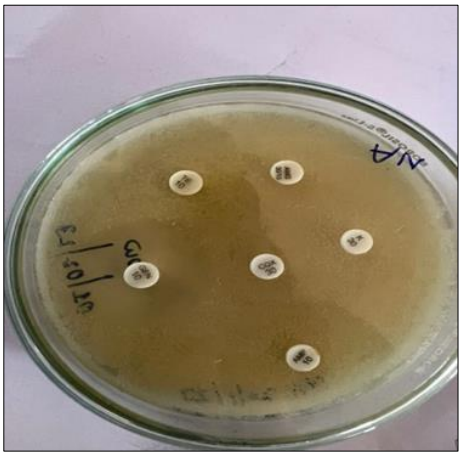


Fig 5: Antibiotic sensitivity test -sensitive to gentamycin

Fig 6: After performing surgery

Fine needle aspiration cytology (FNAC) was performed (Ingle *et al*., 2018) [12], revealed numerous neutrophils which was suggestive of bacterial infection. On Hematological examination revealed decreased red blood cells and hematocrit suggestive of anemia, hepatic and renal function tests were assessed prior to surgery and shown normal values.

The animal was sedated with Inj. Xylazine hydrochloride @ 0.1 mg/kg BW IM and after 15 minutes, animal was restrained in lateral recumbency with the affected mandible placed upwards. The surgical area is cleaned, shaved and prepared aseptically for surgery with Povidone Iodine 5% solution. Local infiltration with 20 ml of 2% lignocaine hydrochloride carried out subcutaneously all around the antibioma. Surgical incision was made just below the bifurcation of jugular vein at submandibular lymph node region. Antibioma mass is calcified and attached theto surrounding soft tissues (Fig.ii). The contents in the mass were drained and flushed with Ringer's lactate and Povidone Iodine. The drained contents were inspissated pus and fibrin clots. Blunt dissection of antibioma capsule had performed to separate mass from surrounding tissues (Figure. iii). Suturing of subcutaneous tissue was done with No.1 PGA910 absorbable suture material in simple continuous manner followed by skin sutures with No.0 Non-absorbable suture material polyamide (Figure vi).

The hard mass was collected and sent for histopathology examination (figure iv). Antibiotic sensitivity test was performed (Bayot ML and Bragg BN 2023) [1] to evaluate the susceptibility of a microbe to different antibiotics, and it was

sensitive to gentamycin and tetracyclines (figure v). Treatment was formulated with antibiotics (gentamycin in combination with ceftriaxone), NSAID (meloxicam), and iron supplements. Suture removal was performed on 14th post-operative day. The animal recovered uneventfully.

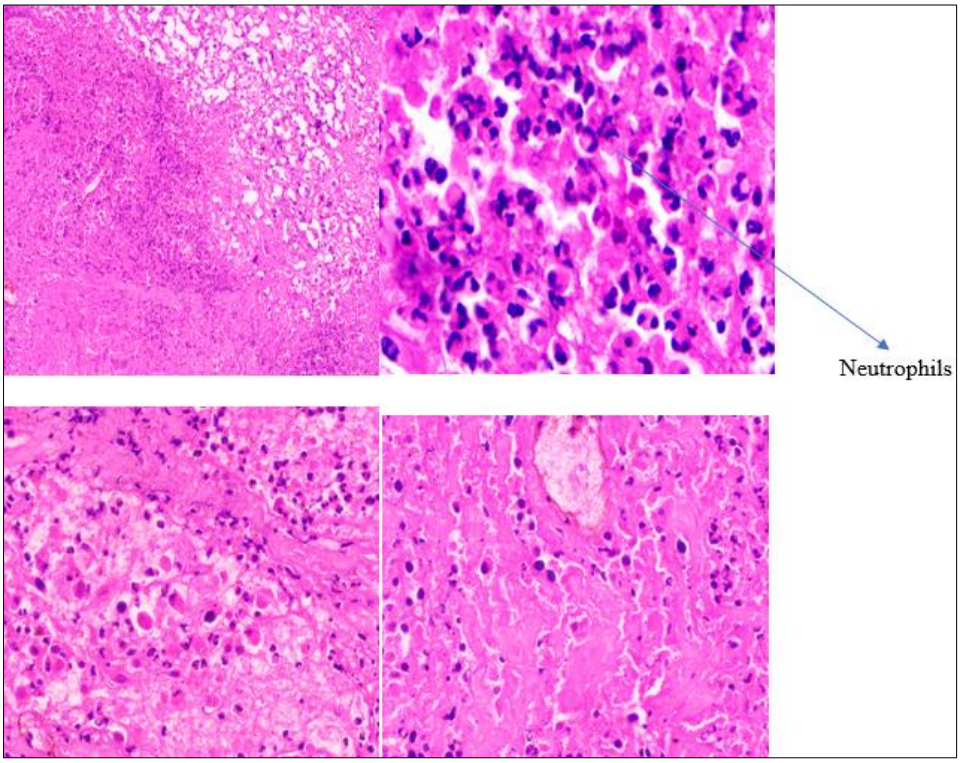
Results and Discussion

An eight-year-old indigenous female cow showed clinical signs of swelling near the left lower jaw (figure i), and subsidiary complaint with in appetence and unable to chew but able to drink water from last 25days. On clinical examination of cow revealed that the normal rectal temperature ranging from 99.6°F to 100.1 °F, heart rate@ 69 bpm (beats per minute), skin tainting time was 3 seconds, both buccal & conjunctival mucous membranes were pale.

Fine needle aspiration cytology (FNAC) was performed (Ingle *et al*., 2018) [12], revealed numerous neutrophils which was suggestive of bacterial infection. On Hematological examination revealed decreased red blood cells and hematocrit suggestive of anemia, hepatic and renal function tests were assessed prior to surgery and shown normal values.

Surgery was performed under general and local anaesthesia, removed antibioma mass with blunt dissection provided excellent recovery. Surgical incision was made just below the bifurcation of jugular vein at submandibular lymph node region provided adequate exposure with minimal soft tissue damage. This procedure of study concurred with the procedure of Hussein 2012 [6]. The hard mass was collected and sent for histopathology examination. Histopathology report revealed numerous neutrophils and fibroblastic cells.

It is a known fact that improper use of antibiotics during development cannot be avoided, due of the accessibility of over-the-counter medications, quacks and animal owners frequently misuse them and advise inappropriate antibiotic use (Singh Harneet *et al*., 2017) [4]. Antibiotic sensitivity test was performed (Bayot ML and Bragg BN 2023) [1] to evaluate the susceptibility of a microbe to different antibiotics, and it was sensitive to gentamycin and tetracyclines. Treatment was formulated with antibiotics (gentamycin in combination with ceftriaxone), NSAID (meloxicam), and iron supplements. The animal recovered uneventfully with in 2weeks.Suture removal was performed on 14th post-operative day. No post-operative complications were associated in this case.



Histopathology of antibioma mass

Conclusion

The development of antibiomas poses a serious problem for the treatment of infectious diseases. The growth of these intricate bacterial communities within biofilms on medical equipment represents a significant risk to the health and wellness of patients. It is becoming more challenging to properly treat these infections due to rising levels of antibiotic resistance, which is the primary cause of antibioma development. Appropriate treatment protocol should be followed in treating antibioma and antibiotics coverage should always considered in every case of antibioma.

Conflict of interest: Authors have no conflict of interest in this study.

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