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Case Report

Diagnosis And Surgical Management of Hard Fibroma in A Bullock

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Abstract

Cutaneous tumors are one of the common neoplastic disorders in the bovine species. The continued exposure of the skin to the external environment risks this organ to neoplastic transformation. A 7 years old white bullock weighing about 350kg was presented with the history of growth in the right side of the neck. Based on the history and clinical examination the case was tentatively diagnosed as a tumor involving the neck and the surgical excision was decided. After the proper restraining and chemical stabilizing of animal, the surgical removal of tumor was made. The bullock was recovered uneventfully without recurrence of the tumor. A final diagnosis for hard fibroma was arrived after cytopathological and histopathological examination of the excised mass. This paper describes a surgical management and diagnosis of hard fibroma in a bullock.

Keywords: Bullock; diagnosis; fibroma; surgical management

Introduction

Cutaneous tumors are prevalent neoplastic disorders in domestic animals and a significant part of all neoplasm in veterinary practice due to their visible external appearance (Subapriya *et al*., 2020). The continued exposure of the skin to the external environment risks this organ to neoplastic transformation (Sahoo *et al*., 2018). Fibromas are benign slow growing neoplasms composed of fibrous or connective tissue (Sodhi, 2021). Arising from the mesenchymal tissue, they can grow in all organs (Kumar *et al*., 2014). While the term fribro-sarcoma is referring to the malignant tumor (John *et al*., 2015). In the literature, there are two common types of fibromas in the skin of humans and animals including the hard fibromas (dermatofibroma) and the soft fibroma (skin tag). The hard fibromas composed of many fibers and few cells. Whereas, the soft fibroma is consisting of many loosely connected cells, and less fibroid tissue (Kumar *et al*., 2014; John *et al*., 2015).

The cases of fibromas in skin of domestic animals were reported by Kumar *et al.* (2014) in cattle, Subapriya *et al.* (2020) in German shepherd dog, Raayat *et al.* (2008) in horse, and Alsobayil and El-Amir, 2013 in the dromedary camel. Reports of fibroma in cattle are relatively rare as compared to papilloma Kumar *et al.* (2014) but cases of fibroma are more common in canine species than other domestic animals (Hasan, 2023). Lather *et al.* (2017) reported that the incidence of fibroma is higher in old female animals (53.4%) than male (46.5%). The occurrence of tumorous growth like fibroma in the skin of different domestic animals is influenced by genetics, long term stress, radiation, viruses, hormonal imbalances, and the continuous exposure of skin to different types of chemical and physical agent (Jubb and Kennedy, 1963).

In gross examination, the majority of fibromas are round to oval intradermal or subcutaneous masses. They have a firm, rubbery characteristic, and they are yellowish grey/white on cut surface (Meuten, 2002; Subapriya *et al*., 2020). Histopathologically, the neoplastic fibrocytes are uniform, with oval normo-chromatic nuclei and an indistinct cytoplasm that blends into the extracellular collagenous stroma (Raayat *et al*., 2008). Generally, fibromas are slow growing benign neoplastic masses and the complete surgical excision is best treatment option (Hasan, 2023). The present case reports a surgical management and diagnosis of hard fibroma in a bullock.

Case description:

A 7-year-old white bullock weighing about 350kg was presented to the Veterinary Teaching Hospital of Bishoftu, Ethiopia with the history of small swelling on the right side of the neck (Figure, 8A). The animal's owner complains that the growth was increased slowly in the last six months ago. Clinical examination revealed spherical shaped hard and firm mass about 7 cm in length. The general clinical examination of the animal, including heart rate 68 beat per minute, respiratory rate 30 breath per minute, and rectal temperature 38.4°C found within the normal range. The fine needle aspiration attempted (Figure, 8B), yielded no cellularity, and found not important. Based on the history and clinical examination the case was tentatively diagnosed as a tumor involving the neck and the surgical excision was decided.

The surgery involved an elliptical skin incision (Figure, 8D) around the tumor base. By using the Metzembaum scissors, the blunt dissection was made to expose and reach the base of the tumor mass. The growth was then removed completely along with the capsule surrounding the site (Figure, 8E). The blood vessels were crushed using hemostatic forceps and ligated using chromic catgut No 1. The subcutaneous tissue was closed with a polyglicolic acid size 2-0 in a simple continuous pattern and skin suturing was performed in interrupted pattern with silk size 2-0 (Figure, 8G).

Post-operatively, antibiotic therapy and dressing of povidone-iodine applied over the suture's lines for three days and the animal was recovered uneventfully. No recurrence was observed in a period of 3 months after operation and the mass was subjected for cytopathological and histopathological examination. The excised mass was weighed 550grams and the cut surface was seen as gray to whitish in appearance (Figure, 8F). A final diagnosis for hard fibroma was arrived after imprint cytopathology and histopathological examination of the excised mass (Figure, 9A and 9B).

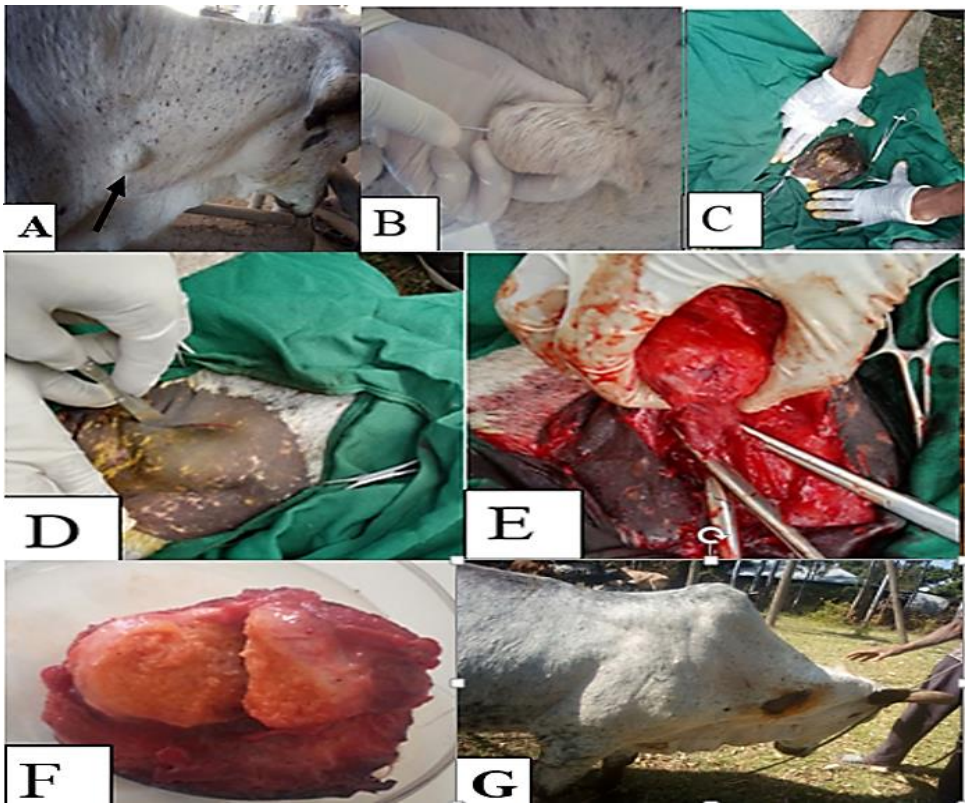

Figure 1: Photograph showing surgical excision of fibroma from the neck of the bullock. (A): Spherical shaped hard mass on the right side of the neck (black arrow head). (B): Fine needle aspiration performed and yielded no cellularity. (C): aseptically prepared surgical site and the drapes were applied. (D): Elliptical skin incision in progress. (E): Bleeding control by hemostatic forceps and growth removal with its capsule. (F): the excised mass was dissected and seen as gray to whitish in appearance. (G): The surgical site closed in interrupted pattern using silk size 2-0.

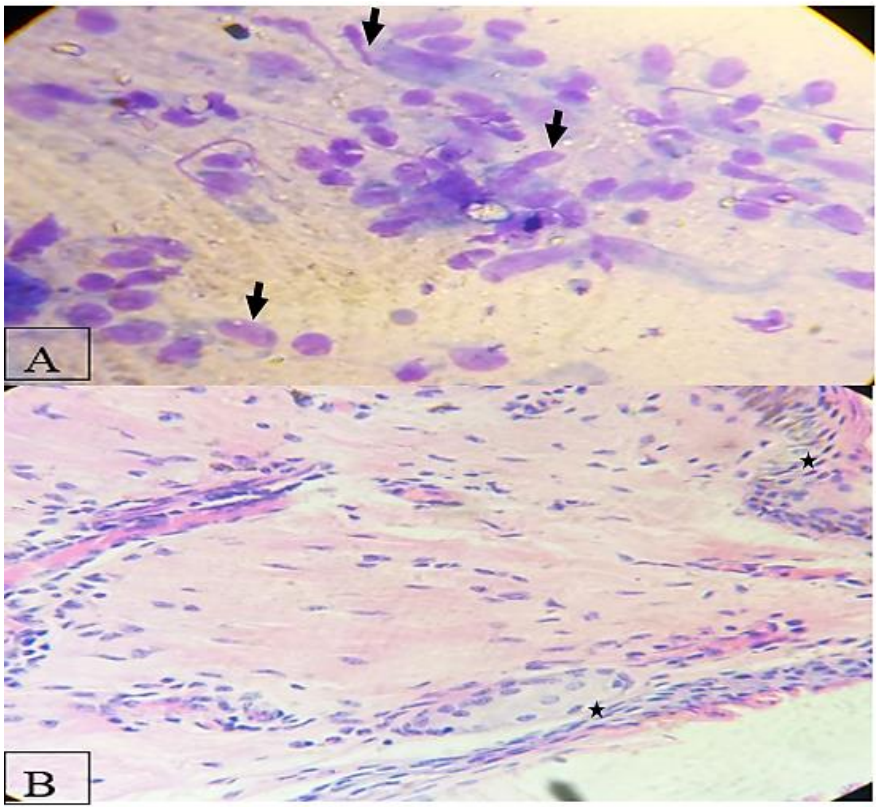

Figure2: Cytological and histological features of hard fibroma. (A) The imprint cytological features of fibroma, cells of oval to spindle shaped nuclie with indistinct cytoplasm (black arrow head). (B): Histopathological finding of fibroplasia from excised mass showed cells of oval to spindle shaped nuclei with a higher cellularity at the tumor edge with connective tissue background (★).

Discussion:

In the present case, fibroma occurred on the right side of the neck in the bullock. Similarly, the occurrence of fibroma has been reported in cattle and dogs, including bilateral interdigital fibroma in cattle Sahoo *et al*. (2017); dewlap fibroma in cattle Kumar *et al*. (2014); fibroma in the horn base of the cattle Laiju *et al*. (2022); ear fibroma in the dog Sodhi *et al*. (2021); and limb fibroma in the German shepherd dog (Subapriya *et al*., 2020). Clinically, the growth was found hard, spherical shaped mass, and showed low cellularity when the fine needle aspiration was made and it was involved the sub-cutaneous tissue. This finding has been reported in previous studies by Kumar *et al*. (2014), and Subapriya *et al*. (2020).

The imprint cytology showed sparse spindle-shaped cells containing oval to elongated nuclei with indistinct cytoplasm, which indicates fibroma (Kumar *et al*., 2014; Subapriya *et al*., 2020). Similar cytological features of fibroma are identified in the present study. Histological examination revealed fibroplasia (cells of abundant oval to spindle shaped nuclei) with a higher cellularity at the tumor edge with connective tissue background was revealed. This finding was in line with case reported by Pazhanivel *et al*. (2021), who stated that histopathological features of cutaneous fibroma had cells with spindle-shaped nuclei that were pale, ovoid to elongated, and had hazy cytoplasm.

The hard fibroma involving dewlap region in white cattle was reported in India by (Kumar *et al*., 2014). This finding was similar with the current case report in which the hard fibroma involving the right side of the neck of white coated bullock was diagnosed. According to Alice (2022), the animals with white or grey-red skin color are more predisposed to the tumors of skin than that of black coat color. This is due to animal with white hairs and pink skin is more likely to get burnt because less melanin is produced than in darker colored skin. Melanin helps to protect the skin from the damage of the sunlight to DNA but white hairs and pink skin allow more of the harmful UV radiation to reach the sensitive layers within the skin (Solano, 2014).

In the present case, the bullock was restrained in the lateral recumency and an elliptical incision around the tumor was made. This procedure is similar with the previous report by (Kumar *et al*., 2014). During gross examination of the cut section of fibroma, it was seen gray to white. This finding agrees with Subapriya *et al*. (2020) who reported the cut section of fibroma in German shepherd was gray and whitish circumscribed hard mass in consistency. The bullock was recovered uneventfully without recurrence of the tumor for three months period. This might be due to the complete surgical removal of fibroma. Based on this finding, surgical removal of fibroma is an effective treatment in bullocks, and it's important to protect white-colored animals from sunburn to minimize the risk of cutaneous fibroma.

Ethical consideration:

The report was submitted to the Addis Ababa University College of Veterinary Medicine and Agriculture Ethical Committee, who verified that the activities conducted were part of clinical and veterinary diagnosis, so they didn't need formal or institutional ethical approval.

Consent statement:

The animal in this study was examined, and treated with the consent of its owner, and handled in accordance with standard veterinary care.

Study presentation:

The manuscript has not been submitted elsewhere nor published elsewhere in whole or in part.

Conflict of interest:

There is no conflict of interest to disclose.

Data availability statement: All the data are presented in the document.

Author contributions:

Ufaysa Gensa: Original draft writing and editing;
Jiregna Dugassa: conceptualization, editing and supervision

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