Vaginal fibroleiomyoma in a cow: a case report

N. Timurkaan[1], M. Aydin[2], F. Yilmaz[3], A. Cevik[1]

[1]Sivrice Vocational School, University of Firat, Elazig, Turkey
[2]Faculty of Veterinary Medicine, University of Firat, Elazig, Turkey
[3]School of Health Sciences, University of Firat, Elazig, Turkey

ABSTRACT: This paper describes a case of fibroleiomyoma seen in the vagina of a cow, diagnosed on the basis of macroscopic, microscopic and immunohistochemical findings. A five year-old female, Simmental and Brown Swiss crossbreed cow presented with six neoplastic masses located on the vaginal wall. The masses were surgically removed through the vaginal route and were firm and well demarcated. Microscopic examination showed that the non-encapsulated neoplastic nodules consisted of the admixture of smooth muscle and connective tissue. Immunohistochemical examination revealed strong focal positive reactions for smooth muscle actin and vimentin, but no positive reaction for CD 68. The tumour reported here was considered benign because of the lack of clear pleomorphism, invasivness, multinuclear giant cells and atypia, and low mitotic activity.

Keywords: vagina; fibroleiomyoma; pathology; cow

Fibroleiomyoma are tumours which consist of an admixture of smooth muscle and connective tissue, and generally have been reported in the female reproductive tract of dogs and cats (Brodey and Roszel, 1967; Cooper and Valentine, 2002; Pulley and Stannard, 1990). They are rarely seen in cows and other animals, but can sometimes causes infertility (Pulley and Stannard, 2002). In a tumor survey study, Brodey and Roszel (1967) reported the presence of fibroleiomyomas in 66 (77.64%) of 85 tumors in vagina or vulva of bitches. Cotchin (1960) surveyed tumours of farm animals, and observed 20 vaginal tumours. These included seven fibromas, seven lipomas, three fibromyomas, two leiomyomas and one fibropapilloma. In another survey from Turkey, one fibromyoma was determined among nine tumours in the vaginas of cows (Kokuuslu et al., 1980). This paper describes a case of fibroleiomyoma seen in the vagina of a cow, diagnosed on the basis of macroscopic, microscopic and immunohistochemical findings.

MATERIAL AND METHODS

We report a case of fibroleiomyoma seen in the vagina of a five year-old female, Simmental and Brown Swiss crossbreed cow which had calved about one month previously. Before parturition, a small mass was observed on the vaginal mucosa next to the vulva, but after growth the mass became more conspicuous and caused urinary retention after parturition. Vaginal examination by rectal palpation and introducing a vaginal speculum revealed six masses of various sizes located on the vaginal wall. The masses were surgically removed through the vaginal route under epidural anaesthesia. Tissue samples were fixed in 10% neutral buffered formalin, embedded in paraffin, cross sections were stained with haematoxylin and eosin (HE) and then Masson's trichrom stains. Some paraffin sections were also immunostained with the avidin-biotin-peroxidase complex (ABC) method for vimentin, smooth muscle actin and CD 68. The ABC method

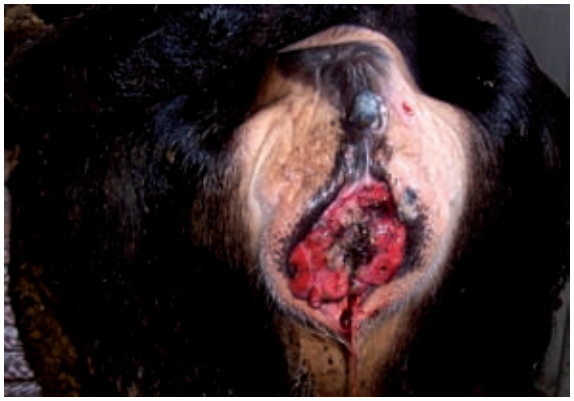

Figure 1. Vaginal fibroleiomyoma; neoplastic nodules caused bloody vaginal discharge on the vaginal wall

for immunohistochemical staining was performed as described previously (Bourne, 1985). The reagents used in the study were of commercial origin (Sigma Chemical Co.). The peroxidase was visualized with AEC chromogen and sections were then counterstained with Mayer's haematoxylin.

Findings

Macroscopically, vaginal examination revealed several neoplastic nodules on the vaginal wall (Figure 1). One of the nodules was 7 × 8 cm in size and protruded outwardly. The tumour caused bloody vaginal discharges. These masses were firm and well demarcated, and on the cut surface had a white to tan colour with a whorled appearance.

Microscopic examinations showed that the tumour masses were located on the vaginal wall originating from the muscular layer. Non-encapsulated neoplastic nodules were demarcated, and did not have an infiltrative growth into the mucosa. The tumour tissues consisted of smooth muscle cells and connective tissue components. Neoplastic cells in some areas were composed of interlacing bundles of smooth muscle fibres with acidophilic cytoplasm and elongated, cigar shaped and rounded blunt ending nuclei (Figure 2A). In some areas neoplastic cells revealed whorls and interlocking bundles

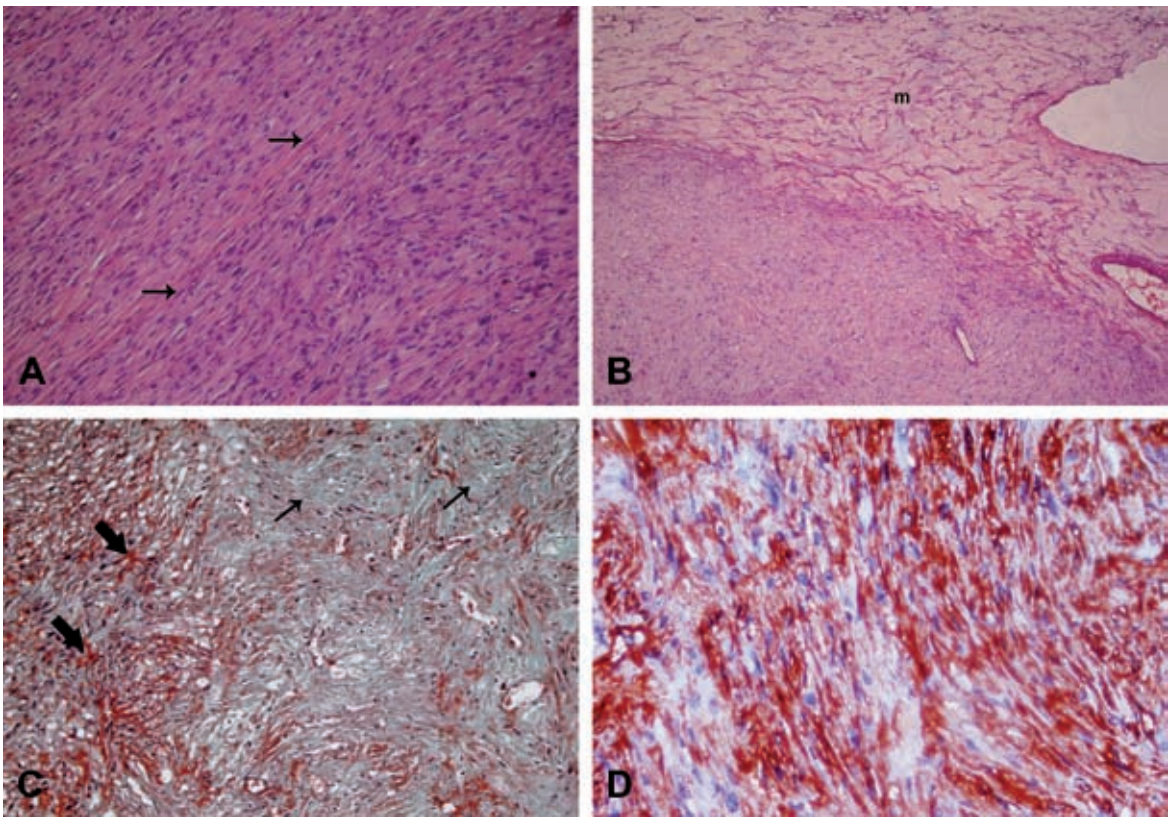

Figure 2. Vaginal fibroleiomyoma: **A** = elongated cells with acidophilic cytoplasm and oval to cigar – shaped nuclei (arrows); H&E × 200. **B** = tumours showed myxomatous appearance (m) and included cells scattered in a vacuolated, basophilic, mucinous stroma; H&E × 100. **C** = muscle (thick arrows)) and collagen (thin arrows) were differentially stained; Masson's trichrom, × 200. **D** = focal strong positive reactions (red) for smooth muscle actin; ABC method, Mayer's hematoxylin counterstain, × 400

of connective tissue fibres and cells. The cells were usually fusiform or stellate in shape, possessed large, ovoid to elongated nuclei and sometimes multiple nucleoli. There was no clear pleomorphism, and little mitotic activity was seen. Collagen fibres were hyalinized in the centre of the tumour, and there was also myxomatous appearance. In this area, cells were scattered in eosinophilic mucinous stroma surrounded by collagenous connective tissue septa (Figure 2B). Necrosis and haemorrhage were seen in the centre of the largest tumours. The overlying mucosa was ulcerated multifocally.

Masson's trichrom differentially stains muscle and connective elements (Figure 2C). Immunohistochemical examination revealed strong positive focal reactions for smooth muscle actin (Figure 2D) and staining for vimentin, but there was no positive reaction for CD 68.

DISCUSSION

A presumptive diagnosis of fibroleiomyoma was made based on the microscopic appearance of the tumor. The diagnosis was confirmed by the focal positive staining for smooth muscle actin and vimentin, and negative staining for CD 68, which is a specific immunohistochemical marker for histiocytomas (Binder et al., 1992). In addition, Masson's trichrom was used to differentially stain muscle and collagenous elements. Fibroleiomyomas, also known as leiomyomas, fibromyomas, myomas, fibroids and leiomyofibromatoses, are special types of leiomyoma, and also have a significant fibrous component (Cooper and Valentine, 2002). This tumour occurs only in mature intact females, and usually manifests itself in multiples (Brodey and Roszel, 1967; Cooper and Valentine, 2002; Pulley and Stannard, 1990).

Some researchers have suggested that if smooth muscle differentiation is apparent, the term leiomyoma can be applied (Brodey and Roszel, 1967; Cooper and Valentine, 2002). However, other reserchers have argued that there exists an admixture of smooth muscle, collagen, and fibroblastic cells, fibroleiomyoma must be used (Pulley and Stannard, 1990). In recent years, the term fibroleiomyoma has been widely used (Pulley and Stannard, 1990; Walzer et al., 2003; Sapundzheiv et al., 2007). The formation of fibroleiomyomas is believed to have a hormonal basis, and an ovariectomy may cause regression of growths (Cooper and Valentine, 2002).

Fibroleiomyomas may be found at any location within the tubular genitalia, especially in the uterus, and in some cases the vagina (Haibel et al., 1990; Pulley and Stannard, 1990; Walzer et al., 2003; Sapundzheiv et al., 2007). The tumours are commonly located on the anterior vaginal wall, and are usually multiple as seen in this study. The clinical signs of fibroleiomyomas are usually few, but under certain circumstances, such as large size and anatomic location, they may cause tenesmus, obstruction of the urethra, and vaginal bleeding (Brodey and Rozsel, 1967; Nikolajsen and Toft, 1987; Haibel et al., 1990; Park et al., 2007). It has been reported that multicentric smooth muscle tumours arising from the vaginal wall and the cervix can be invasive and may result in considerable haemorrhaging and death in goats (Cooper and Valentine, 2002; Uzal and Puscher, 2008). In the current study, the tumour masses protruded through the vulva, and urinary retention and bleeding were the most striking clinical findings.

Soft tissue tumors may undergo degenerating changes such as hyaline degeneration, necrosis, cystic changes, and myxomatous degenerations (Sangwan et al., 1996; Cooper and Valentine, 2002). Hyaline and myxomatous degeneration was also observed in this study. The tumour reported here was considered benign because of the lack of clear pleomorphism, invasiveness, multinuclear giant cells and atypia, and low mitotic activity.

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Corresponding Author:

Dr. Necati Timurkaan, University of Firat, Sivrice Vocational School, 23119 Elazig, Turkey
E-mail: ntimurkaan@firat.edu.tr; ntimurkaan@yahoo.com