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Donkey preputial fibrosarcoma *(Equus asinus)*: case report

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Abstract. Little described in donkeys and of rare occurrence, fibrosarcoma is a malignant tumor of connective tissue.In this report, a 4-year-old donkey of the Pêga breed, used as a breeder, was referred to the Veterinary Hospital with a pendulum neoformation in the prepuce, according to owner with 1 month of evolution.Clinically, the animal was painfull and unconfortable when the tumor was manipulated, and the wound was ulcerated and with a focus of myiasis.An excisional biopsy was performed, and the mass was referred for histopathological examination, where the diagnosis of fibrosarcoma was obtained.Clinical aspects, diagnostic method and histopathological findings will be discussed in this case report.
Keywords: neoplasia, prepuce, biopsy, histopathology.

Introduction

Fibrosarcoma is a rare malignant neoplasm that can occur in all domestic species and can grow anywhere on the organism (Hendrick, 2017).This neoplasm is derived from connective tissue fibers due to an immature proliferation of fibroblasts or undifferentiated spindle cells (Rizk et al., 2013).

The tumors can be circumscribed and infiltrative, recurrent, small or large, and metastasis is not usually common, with surgical excision being the treatment of choice (Hendrick, 2017).

Donkeys, specifically those of the Pêga breed, are widely used for breeding in Brazil, since their rusticity, strength and agility produce more resistant hybrids and of indisputable capacity for work, saddle or leisure (ABCJPêga, 2021).Due to the risk of extinction of different breeds of donkeys around the world, concern about the conservation and preservation of the species has grown (Santana &Bignardi, 2015).In view of this economic importance, reproductive management and attention to reproductive pathologies that involve the external genitalia of breeding donkeys are important for the maintenance of the species.

According to Top et al.(2008), fibrosarcoma is an uncommon tumor to affect the external genitalia of male horses.With few reports in the literature of horses and donkeys affected by this type of neoplasia, and none described specifically in the external genitalia of donkeys, this case report aims to show the clinical characteristics of the tumor, the diagnostic method performed and the histopathological findings in acase of fibrosarcoma in a donkey's prepuce.

Methods

A donkey (*Equus asinus*), 4 years old, fertile male, of the Pêga breed, used as a breeder, was sent to the Veterinary Hospital of the Federal University of Mato Grosso - Campus Sinop (Hovet-UFMT), due to the progressive growth of a tumor in theleft side of the prepuce, according to the owner with 1 month of evolution.

In the physical examination, the animal was healthy, alert and active, responding aggressively to the examination of the affected region, possibly due to pain, and it was necessary to sedate it to clean the wound and remove the installed myiasis for better evaluation.

The mass, located in the left side of external lamina of the internal prepuce, was firm and pendulous, circular, with diameter of approximately 7

cm, already ulcerated, where myiasis was installed (Figure 1).

Due to the rapid tumor growth and the patient's purpose, a complete excision of the structure was chosen, that is, an excisional biopsy, since there was viable tissue for safe performance of the procedure and for later histopathological analysis.

As preoperative exams, complete blood count and blood biochemistry were performed, where in the results no alteration was presented, making the patient able to undergo surgery.

Due to the location of the tumor, the physiological differences of the asinine species for the metabolization of drugs compared to horses (Matthews & Van Loon, 2019) and because it is a minimally invasive surgery, it was decided to perform it with conscious and standing animal, contained in the horse stock, with anesthetic sedation protocol and local anesthesia.

With the animal fasted for 12 hours, appropriate sedation was achieved using an association of Detomidine (0.005-0.02mg / kg, IV) and Butorfanol (0.002-0.05mg / kg, IV) at the suggested donkey doses (Matthews & Van Loon, 2019). Subsequently, 20 ml of lidocaine was infiltrated through the skin, distributed around the tumor for local anesthesia.The surgical technique was based on the incision surrounding the tumor in the prepuce with a safety margin of 3 cm and then divulsinguntil its complete removal, preserving and performing the hemostasis of the venous circulation at the site. To minimize the formation of a seroma, the subcutaneous tissue was approximated with a simple continuous pattern with polyglactin absorbable suture thread, converging the incision edges and then with non-absorbable nylon suture thread, dermorraphy was performed in a simple interrupted pattern.

In the post-surgical treatment, antibiotics based on combinations of benzylpenicillins were used for seven days, and anti-inflammatory drugs based on flunixin meglumine, for 5 days.Twice a day, the region was cleaned with water and chlorhexidine,and then an ointment with penicillin was applied.After 10 days, without post-surgical complications, the stitches were removed, and the animal was discharged.

After excision, the tumor mass was placed in a container with 10% formalin for fixation and sent for histopathological evaluation in the pathology department of the Veterinary Hospital.Macroscopically the mass was nodular, with a diameter of 7 cm, firm when sectioning and grayish white in color, with ulceration at the extremity (figure 2).

The histological evaluation showed a malignant neoplastic proliferation of mesenchymal cells in the dermis, arranged in multidirectional bundles and an undefined infiltrative mantle interspersed with marked fibroconjunctive stroma (figure 3, A).

The cells were spindle-shaped, with sparse and indistinct cytoplasm, with an elongated to oval nucleus, with few numbers of mitosis.Amid the neoplasm, there was a moderate amount of multifocal myxoid matrix.

In the epidermis, there was loss of multifocal epithelium (ulcer) (figure 3, B), with marked cell debris and moderate neutrophilic inflammatory infiltrate, that sometimes entered the superficial dermis.With these histopathological findings, a fibrosarcoma was diagnosed.

Results and discussion

In the literature there are few reports of fibrosarcomas in donkeys, all of them in female donkeys.In 1992, Bonfing & Ingenhost reported fibrosarcoma in a donkey's uterus, which was successfully treated with an ovariohysterectomy.In a retrospective study of affections in female farm animals, specifically in the perineum and vagina that were surgically treated, conducted by El-Maghraby (2002), a fibrosarcoma involving the donkey's vulva and perineum was reported, and surgical treatmentit was a success, without recurrence.Kassem et al.(2018) reported the case of a fibrosarcoma in a donkey's nasal cavity, but due to the aggressiveness of the case and the owner's decision, the animal was euthanized.

In horses, fibrosarcoma can occur at any age, with older horses being affected more frequently.(Knottenbelt et al., 2015).A retrospective study of 114 horses affected with tumors in the penis and prepuce, performed by Top et al.(2008), reported a single case of fibrosarcoma in the prepuce of an horse (0.9%) and classified it as an unusual type of neoplasm to affect the external genitalia of horses, in addition this study related the ages of the affected animals, wheremost were older animals, with an average age of 19.5 years.The case described here is that of a donkey considered young because it is 4 years old, which makes it even more unusual, beyond the anatomical location of the tumor and the sex of the animal, the development of fibrosarcoma at that age.

In horses, tumors in the penis and prepuce frequently occur in the veterinary routine (Top et al., 2008; Knottenbelt et al., 2015; Scott & Hughes, 2015).Squamous cell carcinomas are the most common form of penile and prepuce neoplasia in horses (Top et al., 2008; Rizk et al., 2013; Klopfleisch, 2016).Donkeys, however, have a low incidence of reported cases of squamous cell carcinoma (Knottenbelt et al., 2015; Davis et al., 2016).In a study by Davis et al.(2016), sarcoid was the most common tumor in both donkeys and horses.In the literature, three cases of sarcoid are reported specifically in the donkey prepuce, one in Portugal (Oliveira et al., 2013) and two in Egypt (Rizk et al., 2013).

Since several diseases can affect the penis and prepuce of horses, there are several differential diagnoses (Scott & Hughes, 2015).Due to the

possibility of many clinical suspicions, both neoplastic (for example, sarcoid) and non-neoplastic (for example, exuberant granulation tissue or lesion by habronemosis), an excisional biopsy was chosen as a diagnostic method.

The decision to perform an excisional biopsy took into account the clinical characteristics of the tumor, as it is nodular and pendulous on the skin of the prepuce, firm on palpation, without adherence to the other structure of the donkey's external genitalia and easily located for manipulation and surgical resection.According to Knottenbelt et al., (2015), well-defined tumors, easily accessible and with few anatomical implications are generally the ideal cases for surgical intervention.When the tumor has the properties that support this approach, the effects are very positive and it becomes the best way to obtain a faster diagnosis, which implies less pain, as it is a single procedure.Surgical resection, especially if it is precocious, of fibrosarcomas, is the best treatment option (Klopfleisch, 2016; Daleck& De nardi, 2016; Hendrick, 2017).

In addition to genetic mutations, several factors can promote the development of tumors, which are chemical, radiation, infection by microbiological agents, diet, age, stress and current diseases.Like other types of neoplasia, the etiology of fibrosarcoma is still unclear and may be related to all the factors previously mentioned (Klopfleisch, 2016).Schumacher et al.(1986) reports a case of a 2-year-old stallion, Quarter horse, who developed a fibrosarcoma in the gluteal region induced by burn, 9 months after the injury. According to Zachary (2017), traumas may predispose to the development of a fibrosarcoma subtype called keloidal, where histologically large hyalinized collagen fibers are circumvented by fibroblast cells; the histopathological examination of the reported case, however, did not present these microscopic findings, which does not allow us to state that trauma was a predisposing factor for the development of the tumor.

The clinical characteristics of the tumor in this reported case are consistent with those described in the literature, where fibrosarcomas are solitary nodules or masses, of dermal or subcutaneous location that, depending on their rapid growth, can become large tumors;Its consistency and color vary according to the amount of collagen intercalated, being generally firm and whitish-gray in color (Klopfleisch, 2016; Hendrick, 2017);and frequently ulcerated in the epidermis (Knottenbelt et al.; 2015).

Histologically, and according to the case described, fibrosarcomas consist of a proliferation of spindle-shaped mesenchymal tumor cells (fibroblasts) arranged in bundles, separated by a variable amount of collagenous stroma.These cells have sparse cytoplasm and an elongated or oval nucleus and few mitotic figures (Knottenbelt et al., 2015; Klopflisch, 2016).According to Hendrick (2017) the number of mitotic figures in fibrosarcomas is variable, and their increase is associated with more aggressive tumors. With this reported case presenting few mitotic figures, it can be said that the tumor was a less aggressive fibrosarcoma.

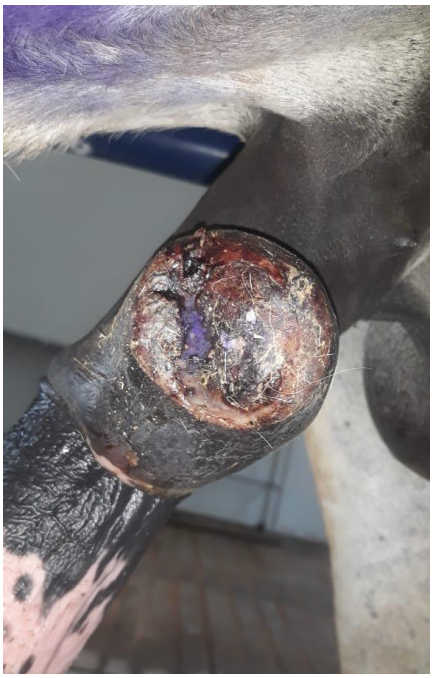

Figure 1. Clinical presentation of the preputial tumor in a 4-year-old donkey,located on the left side of the prepuce, with an ulceration on the extremity.

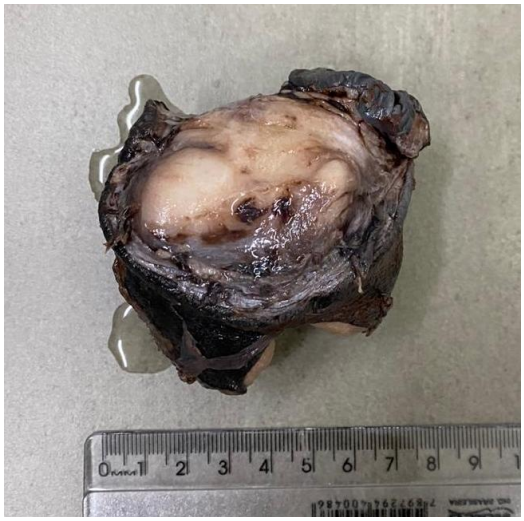

Figure 2. Macroscopic evaluation of the sectioned neoplasic mass of the prepuce, with whitish-gray color.

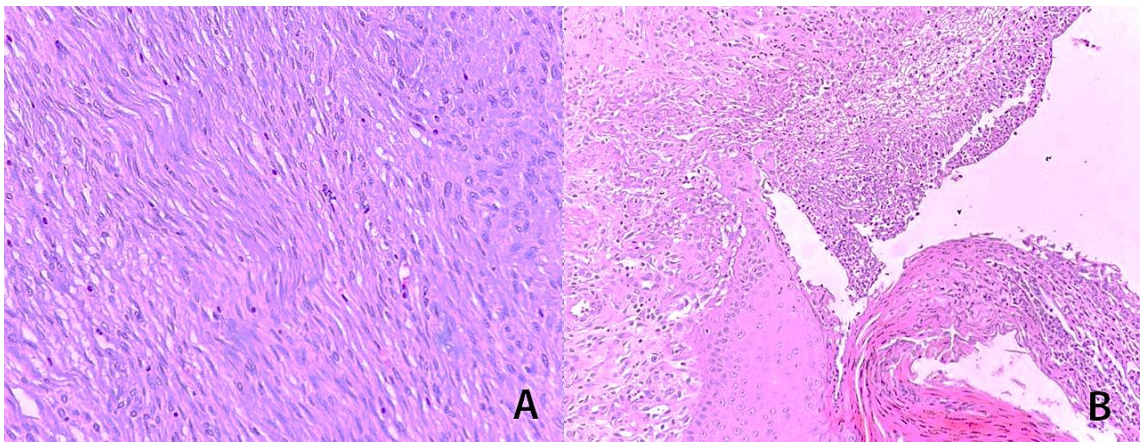

Figure 3.(A) Histological section showing malignant neoplastic proliferation of fibroblasts in the dermis, arranged in the form of multidimensional bundles.Hematoxylin-eosin.40x objective.(B) Histological section showing an area of ulceration in the epidermis.Hematoxylin-eosin.5x objective.

According to Knottenbelt et al.(2015) the most important differential diagnosis for a fibrosarcoma in horses would be a sarcoid, as it presents an identical histological appearance, and the nodular type sarcoid has more characteristics of a fibrosarcoma, however it has a limited vascular component that can be used for differentiation.

About the prognosis, fibrosarcomas are commonly locally invasive, but have little tendency to metastasize (Knottenbelt et al., 2015).In the case reported, total surgical excision with a safety margin of 3 cm allows for higher success rates curative, but the malignancy of this type of neoplasia, which is characteristically infiltrative, makes recurrence possible.According to Klopfleisch (2016), up to two thirds of fibrosarcomas after surgical excision develop recurrence, making the prognosis reserved in most cases. Four months after the surgery, the owner reported that there was no recurrence of the tumor in the donkey, which allows to consider the surgical procedure, for the performance of the excisional biopsy, a success.

Conclusion

For the equine veterinarian, prepuce tumors can be a clinical manifestation present in the routine and the report of this case reinforce that the occurrence of fibrosarcoma is rare but that it is an important differential diagnosis for cases of tumors in the external genitalia, both for donkeys and equines, since they are species with many peculiarities, but also many similarities. The good clinical evaluation of the tumor and the patient's condition is what allows the best elaboration of a diagnostic plan, allowing to obtain a prognosis with higher survival rates, even if a histological evaluation is performed afterwards to confirm the diagnosis.

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