Arq. Bras. Med. Vet. Zootec., v.76, n.3, e13125, 2024 http://dx.doi.org/10.1590/1678-4162-13125
Case Report - Veterinary Medicine

Cutaneous hemangiosarcoma in a horse – case report

[*Hemangiossarcoma cutâneo em equino – relato de caso*]

M.L. *Antonioli*[1], P.A. *Canola*[2*], L.F. *Mendonça*[1], P.H.D. *Nunes*[1], C.I.S. *Oporto*[1], R.O. *Vasconcelos*[2]

[1] Graduate, Faculdade de Ciências Agrárias e Veterinárias, UNESP, Jaboticabal, SP, Brasil
[2]Faculdade de Ciências Agrárias e Veterinárias, UNESP, Jaboticabal, SP, Brasil

ABSTRACT

Hemangiosarcoma is a rare neoplasia in horses, with a reported prevalence of 0% to 0.7% and literature reports are few. Here we report a case of cutaneous hemangiosarcoma on the palmaromedial aspect of the metacarpophalangeal joint of the right thoracic limb of a 28-year old mixed breed mare. Macroscopically, the lesion was ulcerated and hemorrhagic, with significant involvement of the surrounding tissues resulting in acquired flexural deformity of the metacarpophalangeal joint and grade 4/5 lameness (AAEP). The diagnosis was confirmed histologically. Surgical ablation was not possible and, in view of the involvement of surrounding tissues and the age of the patient, the lesion was treated conservatively.

Keywords: neoplasia, diagnosis, dermis, endothelium, lameness

RESUMO

O hemangiossarcoma é uma neoplasia rara em equinos, com prevalência relatada de 0% a 0,7% e poucos relatos na literatura. Aqui relatou-se um caso de hemangiossarcoma cutâneo na face palmaromedial da articulação metacarpofalângica do membro torácico direito de uma égua sem raça definida de 28 anos. Macroscopicamente, a lesão era ulcerada e hemorrágica, com envolvimento significativo dos tecidos circundantes, resultando em deformidade flexural adquirida da articulação metacarpofalângica e claudicação grau 4/5 (AAEP). O diagnóstico foi confirmado histologicamente. A ablação cirúrgica não foi possível e, tendo em vista o envolvimento dos tecidos circundantes e a idade do paciente, a lesão foi tratada de forma conservadora.

Palavras-chave: neoplasia, diagnóstico, derme, endotélio, claudicação

INTRODUCTION

Hemangiosarcoma is an unusual vascular neoplasm in horses (Johns *et al*., 2005). It is most described in dogs and, less frequently, in cats and horses. In other species it occurs more sporadically (Warren and Summers, 2007). In horses, it has been reported in the eye, skin and in multicentric form (Maxie and Robinson, 2007), and recently a case of disseminated hemangiosarcoma in a mule was reported (Fuentes *et al*., 2023).

Hemangiosarcoma lesions may appear as solitary masses, with varying degrees of local tissue infiltration, or as masses involving multiple organs (Southwood *et al*., 2000; Taintor, 2014). Cutaneous hemangiosarcoma can occur anywhere in the body as single or multiple masses of soft tissue, with adjacent tissue edema. In the distal limbs, it may also cause lameness (Southwood *et al*., 2000; Johns *et al*., 2005; Scott and Miller, 2011; Schaffer *et al*., 2013). The lesion may be friable, hemorrhagic, with areas of erosion or covered by skin, but alopecic (Scott and Miller, 2011). The neoplasm may invade surrounding structures such as joints, tendons, and muscular tissue (Southwood *et al*., 2000; Johns *et al*., 2005; Scott and Miller, 2011; Schaffer *et al*., 2013).

*Corresponding author: paulo.canola@unesp.br
Submitted: September 1, 2023. Accepted: November 22, 2023.

Hemangiosarcoma is usually diagnosed in middle-aged horses, although sex or breed predisposition has not been described in these animals (Taintor, 2014). The diagnosis of hemangiosarcoma is difficult due to the unspecific variability of clinical signs or lab results (Taintor, 2014; Beaumier *et al*., 2020). Its final diagnosis is based on histopathological examination of a central, excisional biopsy or by complete excision of the granulomatous tissue. Well differentiated hemangiosarcoma are composed of spindle-shaped or elongated cells depicting hyperchromatic ovoid nuclei that contain large nucleoli, which form blood-filled vascular channels (Bertazzolo *et al*., 2005).

Unfortunately, treatment of hemangiosarcoma is often unrewarding (Taintor, 2014) and frequently does not benefit the patient (Johns *et al*., 2005). Treatment may be limited due to the location of the lesion, aggressiveness of the neoplasia, and severity of clinical signs (Johns *et al*., 2005; Taintor, 2014). Treatment options include surgical excision, topical or systemic chemotherapy, and radiation therapy. In horses, most cases are diagnosed at the end-stages of disease and the prognosis is usually unfavorable. Recurrence rates are high and surgical excision with wide margins is associated with a more favorable prognosis (Taintor, 2014; Arenas-Gamboa and Mansell, 2011). There are few reports of this neoplasia in the horses, so here we present a clinical case of cutaneous hemangiosarcoma in the distal limb of an elderly mare.

CASUISTRY

A 28-year-old mare, weighing 320kg, was admitted to the institution's veterinary teaching hospital with a five-month history of a chronic ulcerative lesion on the right thoracic limb, at the palmaromedial aspect of the metacarpophalangeal joint and pastern (Figure 1).

Figure 1. Ulcerated wound in the right thoracic limb, involving the region of the metacarpophalangeal joint, of a female of the equine species, of 28 years old, weighing 320 kg, admitted to the Veterinary Hospital. A) Palmar view, B) Lateral view and C) Palmaromedial view highlighting the extension of neoplasia, with hemorrhagic and necrotic areas. Acquired flexural deformity because of the neoplasia is also noticeable over the side view (B).

On admission, the patient had a body condition score of 3/5 (Carroll and Huntington, 1988) and appetite was maintained despite the aggressive nature of the lesion. The heart rate was 44 beats per minute, slightly above the upper limit expected for the species (Feitosa, 2004). The recorded respiratory rate of 16 movements per minute was within the physiological range. The mucous membranes were pale pink, with a capillary refill time of two seconds. On

examination, the patient had a grade 4/5 lameness score (AAEP), with an acquired flexural deformity of the metacarpophalangeal joint (Figure 1B). Swelling on the distal extremity of the affected limb, and the presence of ulcerate lesions on the palmaromedial aspect of the metacarpophalangeal joint and pastern were apparent.

Complete blood count, biochemical measurements (total plasma protein and fibrinogen) and two orthogonal radiographic projections were requested. The complete blood count revealed hematocrit of 27.9% (reference value of 32 - 53%). Biochemical tests showed plasma fibrinogen of 6.0g/dl, (reference values 2.0 - 4.0g/dl), and total plasma protein of 8.0g/dl (reference values 5.6 - 8.0g/dl) (Sprayberry and Robinson, 2014). Radiographic examination revealed no bone remodeling, only flexural deviation of the metacarpophalangeal joint.

To collect samples for histopathological examination, the patient was sedated with 10% xylazine hydrochloride (0.8mg/kg, intravenously) and a perineural anesthetic block (low palmar nerve block) with 2% lidocaine hydrochloride. Then, four cutaneous fragments from different points of the lesion were collected and placed in a 10% buffered formaldehyde solution for further processing. The material was sent to the institution's veterinary pathology laboratory for sample processing and analysis. On macroscopic evaluation, the cutaneous fragments had a fibroelastic consistency, and an irregular and superficially whitish appearance. The cut surface was homogeneous, whitish, with a focal blackened area.

After processing and glass slide fixation, the samples were stained with Hematoxylin and Eosin (HE) for evaluation under light microscopy. Neoplastic proliferation of poorly delimited, non-encapsulated, infiltrative-growing mesenchymal cells with high cellularity was noted. The cells were arranged in rudimentary vascular formations, filled with a moderate amount of blood in the deep dermis. Individually, the cells had slightly irregular boundaries, with elongated and acidophilic cytoplasm. Cell nuclei were round, discolored and with roughly clumped chromatin, all containing a single and prominent nucleolus. Also, moderate anisocariosis was observed and no mitotic figures were observed in the 10 CGA field (Large Increase Fields). In addition, there was a considerably marked inflammatory infiltration composed predominantly of neutrophils in the intratumoral region. In the superficial dermis, neoplastic cells were arranged in well-differentiated and layered vascular formations. The epidermis had multiple ulcerative foci, associated with marked neutrophilic inflammatory infiltration (Figure 2). Histopathological findings were consistent with the diagnosis of cutaneous hemangiosarcoma.

Due to the advanced state of the lesion and the likelihood of infiltration into adjacent tissues the lesion was managed conservatively. To control inflammation and pain, oral meloxican was used at the dosage 0.6mg/kg, once daily for seven days. This was subsequently replaced by oral phenylbutazone at a dose of 2.0mg/kg once daily for further 15 days, in combination with omeprazole at a dose of 4.0mg/kg once daily, orally.

Daily wound cleaning was performed with chlorhexidine followed by rinsing with sterile saline solution. Subsequently, the ulcerated areas were covered with gauze soaked in hypertonic saline solution (7.4% sodium chloride). Then, a distal bandage with hydrophobic cotton and crepe bandage was applied. The cleaning and changing of the bandage were maintained for 17 days. After this period, there was clinical improvement of the lesion (Figure 3), with reduction of necrotic tissue and hemorrhagic areas, showing areas of epithelialization. At this point, the dressing was changed every 48 hours, and gauze soaked in hypertonic saline solution was no longer used. The owner then requested the patients to be discharged and opted to continue the conservative treatment at home.

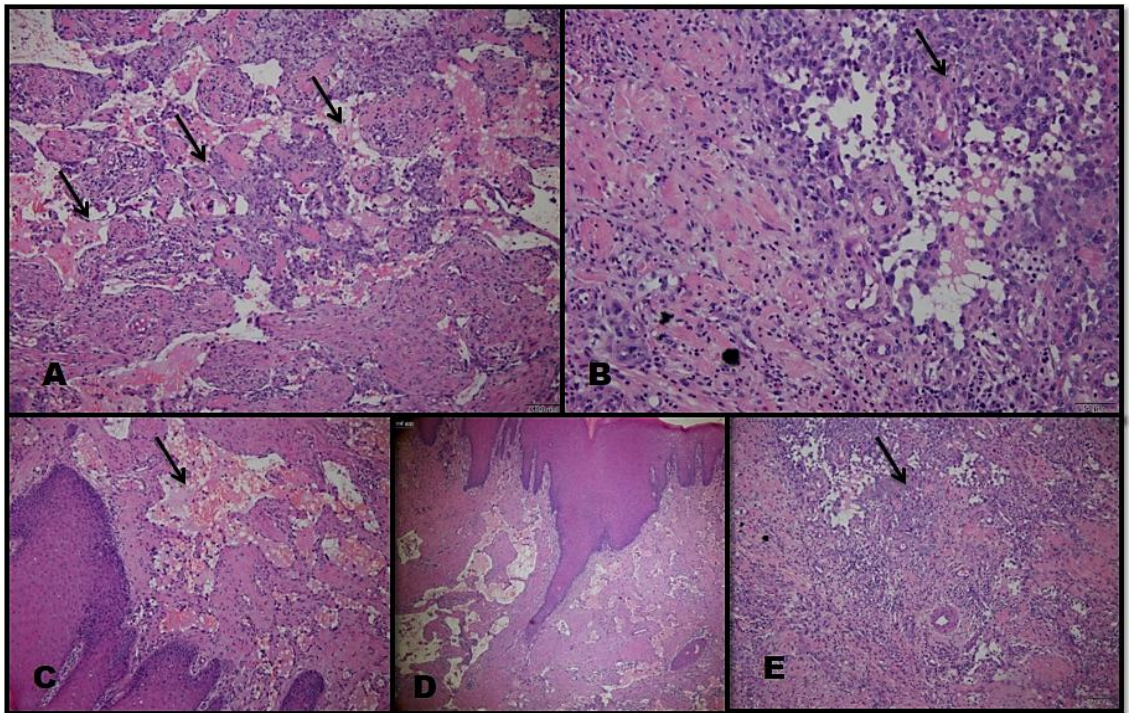

Figure 2. Photomicrograph of skin tissue, HE stain; A) Deep dermis area with rudimentary vascular formations (arrow), 100X magnification; B) Neoplastic cells with moderate anisocariosis and evident nucleoli (arrow), 200X magnification; C) Superficial dermis area with well-differentiated vascular formations (arrow), 110X magnification; D) Dermal area with multiple vascular formations, 40X magnification; E) Accentuated inflammatory infiltrate composed predominantly of neutrophils in tumor region, 100X increase.

Figure 3. Appearance of the ulcerated lesions on the plantaromedial aspect of the right thoracic limb, involving the metacarpophalangeal joint region of a 28-year-old female horse, weighing 320kg, 20 days following implementation of conservative treatment. Improvement in the appearance of the lesion is observed, with reduction of necrotic tissue, reduction of hemorrhage and presence of areas of granulation and epithelialization. A) Medial view, B) Lateral view and C) Palmar view. Acquired flexural deformity because of the neoplasia is still noticed over the Lateral view (B).

DISCUSSION

Hemangiosarcomas are neoplasms more commonly diagnosed in dogs and cats than in large species such as horses. It is a rare neoplasm in horses and difficult to diagnose (Taintor, 2014). It is most observed in the eyeball, on the skin or in a multicentric form (Maxie and Robinson, 2007). They may appear as solitary masses, with varying degrees of local infiltration, or as masses that affect multiple organs (Southwood *et al*., 2000; Taintor, 2014).

The cutaneous form can occur anywhere on the body. Presenting as a single or multiple mass of soft tissues with adjacent edema, with the musculoskeletal and respiratory systems being the most affected. When it affects the distal portion of the limb, it can invade surrounding structures, such as joints, tendons, and muscles (Southwood *et al*., 2000; Johns *et al*., 2005; Scott and Miller, 2011; Schaffer *et al*., 2013). In these cases, the animal may present pain and difficulty moving (lameness), as observed in the patient in the case reported here. The acquired flexural deformity may be related to the possible infiltration of cutaneous hemangiosarcoma in the soft tissues adjacent to the right metacarpophalangeal joint, as reported by other authors (Southwood *et al*., 2000; Johns *et al*., 2005; Scott and Miller, 2011; Schaffer *et al*., 2013). Hemangiosarcomas are more commonly reported in middle-aged animals (Southwood *et al*., 2000), unlike the reported case, in which the patient was already elderly.

In view of the aggressiveness, highly infiltrative and recurrent character of the lesion, the most affected animals are euthanized (Taintor, 2014). In this case, the location of the lesion precluded optimal tissue excision, and the significant tissue infiltration that likely compromised tendinous and ligamentous structures made euthanasia a real consideration. However, the owner wished to continue, and conservative therapy (wound cleaning and pain management) was instituted. Tissue excision, although indicated in these cases (Taintor, 2014; Arenas-Gamboa and Mansell, 2011), was not considered due to the extension of the affected area, involvement of adjacent structures and another relevant factor was the advanced age of the patient, encouraging palliative measures for better survival. The patient was discharged at the request of the owner, along with instructions for cleaning and palliative care of the wound. After hospital discharge, the patient was lost to follow-up.

CONCLUSION

Cutaneous hemangiosarcoma, despite its low prevalence, should be considered as a differential diagnosis in neoplastic lesions in horses. Limb injuries can lead to lameness and the pain can cause analgesic support of the affected limb, which in chronic cases can cause an acquired flexural deformity.

Histopathological evaluation is essential for the accurate diagnosis of cutaneous hemangiosarcoma. In the reported case, due to the progression of the neoplasm and the infiltration in the surrounding structures associated with the advanced age of the patient, surgical excision was not considered. The conservative treatment performed proved to be effective in controlling pain, improving the appearance of the wound and swelling of the limb, promoting greater comfort for the patient.

REFERENCES

ARENAS-GAMBOA, A.M.; MANSELL, J. Epithelioid haemangiosarcoma in the ocular tissue of horses. *J. Comp. Pathol.*, v.144, p.328-333, 2011.

BEAUMIER, A.; DIXON, C.E.; ROBINSON, N. *et al*. Primary cardiac hemangiosarcoma in a horse: echocardiographic and necropsy findings. *J. Ve.t Cardiol*., v.32, p.66-72, 2020.

BERTAZZOLO, W.; DELL'ORCO, M.; BONFANTI, U. *et al*. Canine angiosarcoma: cytologic, histologic and immunohistochemical correlations. *Vet. Clin. Pathol.*, v.34, p.28-34, 2005.

CARROLL, C.L.; HUNTINGTON, P.J. Body condition scoring and weight estimation of horses. *Equine Vet. J.*, v.20, p.41-45, 1988.

FEITOSA, F.L.F. Exame físico teral ou de rotina. In: _____. *Semiologia veterinária*: a arte do diagnóstico. São Paulo: Roca, 2004. p.82.

FUENTES, B.R.; VALERO-GONZÁLEZ, M.; MARTÍN-CUERVO, M. *et al.* Disseminated hemangiosarcoma in a mare mule. *J. Equine Vet. Sci.*, v.120, p.104112, 2023.

JOHNS, I.; STEPHEN, J.O.; DEL PIERO, F. *et al*. Hemangiosarcoma in 11 young horses. *J. Vet. Intern. Med*., v.19, p.564-570; 2005.

MAXIE, M.G.; ROBINSON, W.F. Cardiovascular system. In: MAXIE, M.G. (Ed.). *Jubb, Kennedy and Palmer`s pathology of domestic animals*. Philadelphia: Saunders, 2007. p.103.

SCHAFFER, P.A.; WOBESER, B.; MARTIN, L.E. *et al.* Cutaneous neoplastic lesions of equids in the central United States and Canada: 3,351 biopsy specimens from 3,272 equids (2000-2010). *J. Am. Vet. Med. Assoc.*, v.242, p.99-104, 2013.

SCOTT, D.; MILLER, JR. W. Neoplasms, cysts, hamartomas, and keratoses. In: SCOTT, D.W.; MILLER, W.H. (Eds.). *Equine dermatology*. Missouri: Elsevier, 2011. p.491-493.

SEGABINAZZI, L.G.T.M.; APOLONIO, E.V.P.; TONGU, E.A. *et al*. Primary uterine hemangiosarcoma in a thoroughbred: a case report. *J. Equine Vet. Sci*., v.106, p.103768, 2021.

SOUTHWOOD, L.L.; SCHOTT, H.C.; HENRY, C.J. *et al*. Disseminated hemangiosarcoma in the horse: 35 cases. *J. Vet. Intern. Med*., v.14, p.105-109, 2000.

SPRAYBERRY, K.A.; ROBINSON, N.E. Current therapy in equine medicine. 7.ed. St. Louis: Elsevier Health Sci., 2014. 985p.

TAINTOR, J. Haemangiosarcoma in the horse. *Equine Vet. Educ.*, v.26, p.499-503, 2014.

WARREN, A.L.; SUMMERS, B.A. Epithelioid variant of hemangioma and hemangiosarcoma in the dog, horse, and cow. *Vet. Pathol.*, v.44, p.15-24, 2007.