



## Surgical Treatment of Hemangiopericytoma in the Lip of a Filly: A Clinical Report

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### Abstract

**Case Description:** A 1.5-year-old filly weighing approximately 150 kg was presented to the clinic for a dense tumor-like mass on her lower lip.

**Clinical Findings:** According to physical examinations, it was observed that the filly had a solitary, well-circumscribed, red or pinkish mass of 7 × 5 × 3.5 cm. Palpation caused pain in the mass; however, no other physical abnormality was detected.

**Radiological Diagnosis:** Radiographs indicated a well-circumscribed, focally mineralized, non-invasive to muscle layer mass without signs of further bone invasion and periosteal reaction.

**Treatment and Outcome-** Surgical removal of the mass was applied under general anesthesia. Histological examination revealed that the tumor contained spindle-shaped cells surrounding the endothelial-lined vascular spaces. Neoplastic cells were arranged in short interlacing bundles and storiform whorls were randomly distributed throughout a fibrous or myxoid stroma. Neoplastic cells formed many whorls separated by spacious stromal collagen. Eight months after surgical excision, the filly was reexamined and no evidence of lip mass recurrence was observed.

**Clinical Relevance-** Hemangiopericytomas poorly respond to chemotherapy and radiotherapy and complete surgical resection is the only effective therapy for hemangiopericytoma.

**Keywords:** Filly, hemangiopericytoma, radiography, histopathology

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### Introduction

Hemangiopericytoma as a rare vascular tumor arises from pericytes, which is usually detected as solitary, firm, multi-nodular, well-circumscribed mass of 2 to 25 cm.

It most commonly appears on the limb extremities with some complications such as alopecia, hyperpigmentation, and ulceration.<sup>1-3</sup> The most controversial diagnosis of vascular tumors is that of hemangiopericytoma and pathologically distinguishing it from synovial sarcoma and solitary fibrous tumor is challenging because of their shared histologic features.<sup>4-7</sup> In humans, Hemangiopericytoma is considered as a malignant neoplasm with the reported incidence of approximately 2.5% of all soft tissue sarcomas. Hemangiopericytoma is frequently found in lower extremities, especially in the thigh.<sup>8</sup> It is usually observed as solitary, well circumscribed, lobulated and pseudocapsulated gray-white to red-brown

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masses, ranging from 1-20 cm in diameter. The metastatic potential of human hemangiopericytoma is reported to be highly varying, with metastatic rates ranging from 11 to more than 50 per cent.<sup>5</sup> Microscopic features of human hemangiopericytoma consist of tightly packed oval or spindle cells arranged around thin-walled sinusoidal vascular channels.

The present study describes the pathological features of a hemangiopericytoma in a filly's lip.

### Case Description

A 1.5-year-old filly weighing approximately 150 kg was presented to the department of Veterinary Surgery for a dense tumor-like mass on the interdental gingiva of the lower jaw (Fig. 1). The mass had been detected few months earlier; however, its size recently increased and it was infected. The filly had taken (20000 IU/kg) as well as Flunixin Meglumine (1mg/kg) for three days prior to the surgery. With regard to the physical examination, it was observed that the filly had a solitary, well-circumscribed, red or pinkish mass of  $7 \times 5 \times 3.5$  cm. No other physical abnormality was detected. The vital signs such as pulse rate, respiratory rate, and rectal temperature were reported to be within normal range.



**Figure 1:** A dense tumor-like mass in the lower jaw of a Filly.

### Radiological Diagnosis

Further examinations of the lower jaw demonstrated 7.0 cm by 3.0 cm uniform radiopaque swelling attached to distal mandibular structure (which was different from adjacent soft tissue images), extending from interdental incisor's gingiva to caudal part (7.0 cm). The mandible bone margins appeared intact except in a few points. No other radiographic finding was obtained.

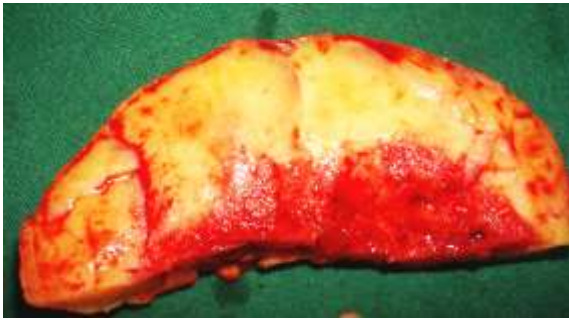
### Surgical Intervention

The horse starved for 24 hours and was premedicated by xylazine (1mg/kg) and acetylpromazine Hcl (0.1 mg/kg) as well as anesthesia induced by (2mg/kg). The horse was intubated and connected to the closed circuit anesthetic machine and anesthesia was maintained by halothane.

The lower lip was disinfected and all the tumor tissue was excised from the interdental gingiva using electro surgery. The bleeders were controlled and coagulated. The tissues which were close to the mandibular bone were removed to the extent possible not to leave any remnant of the suspected tissues. The tumor bed was cauterized to ensure no further regrowth of the tumor. The horse was left to recover from anesthesia. Antibiotic (penicillin and streptomycin (20000 IU/kg) and anti-inflammatory drug (Flunixin Meglumine (1mg/kg)) were administered immediately and continued for 5 days. Twenty-four hours after the surgery, the horse was eating and chewing dry *Alfalfa*; however, the lips were apart from each other, and hanging down.

The cut surface was grayish to partly red on cross section and firm in consistency (Fig. 2). The appropriate tissues were fixed in 10% neutral buffered formalin, dehydrated in graded ethanol, cleared in xylene and embedded in paraffin wax. Sections of 5  $\mu$ m thickness were stained by hematoxylin and eosin (H&E) and examined microscopically.

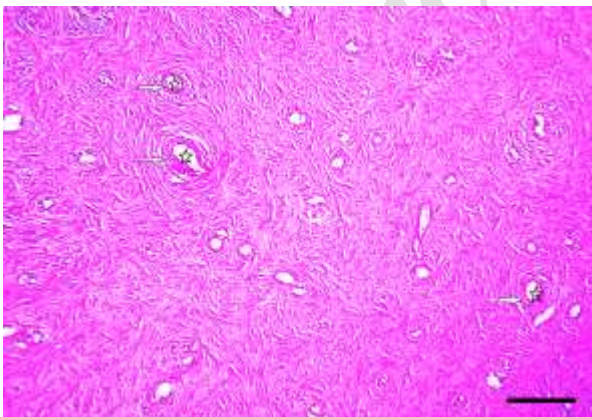
Eight months after the surgical excision, the horse was reexamined and no evidence of lip mass recurrence was observed.



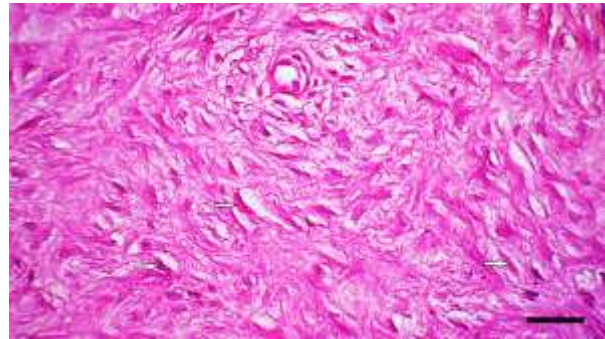
**Figure 2:** Hemangiopericytoma. The cut surface of the mass was greyish to partly red on gross section and firm in consistency

### Histopathological Diagnosis

Histopathological features of the hematoxylin and eosin staining revealed that the tumor contained spindle-shaped cells surrounding the endothelial-lined vascular spaces (Fig. 3). Neoplastic cells were arranged in short, interlacing bundles and storiform whorls were randomly distributed throughout a fibrous or myxoid stroma. Neoplastic cells formed many whorls separated by spacious stromal collagen. The majority of the cells were spindle-shaped to fusiform with indistinct cell borders and homogenous eosinophilic cytoplasm. Their nuclei were round to oval with a vesiculate to finely-stippled chromatin pattern along with a single prominent nucleolus with rare mitotic figures (Fig. 4). In addition, the neoplastic mass contained mild hemorrhages, multifocal necrotic lesions of variable size and some neoplastic cells were concentrically arranged around blood vessels.



**Figure 3:** Hemangiopericytoma. The tumor contained spindle-shaped cells (arrows) surrounding the endothelial-lined vascular spaces (asterisks) (HE, Bar: 125  $\mu$ m).



**Figure 4:** Hemangiopericytoma. The majority of the cells are spindloid to fusiform with indistinct cell borders and homogenous eosinophilic cytoplasm (arrows) (HE, Bar: 25  $\mu$ m).

### Clinical Relevance

Hemangiopericytoma is a sarcoma characterized by concentric whorls of spindle cells around capillaries, which is exclusively occurring in the dog.<sup>3,8,9</sup> Hemangiopericytoma in histopathology has several patterns including perivascular whorled, storiform, myxoid and epithelioid patterns, and its common pattern is perivascular whorls pattern (fingerprint pattern) for the spindle-shaped-to-ovoid cells.<sup>3,10-13</sup> In this case, histopathological features revealed that the tumor contained spindle-shaped cells surrounding the endothelial-lined vascular spaces. Neoplastic cells were arranged in short, interlacing bundles and storiform whorls were randomly distributed throughout a fibrous or myxoid stroma. Several studies have reported tumor occurrence in human and dogs. In human, hemangiopericytoma occurs most commonly on the limbs, retroperitoneum, head, and neck. Metastasis of this tumor, usually to bone, lung, and the breast, was reported to occur in 12–45% of human cases.<sup>14,15</sup> In the present report, eight months after the surgical excision, the horse was reexamined and no evidence of lip mass recurrence was observed.

In dogs, hemangiopericytoma develops exclusively on the subcutaneous tissue with occasional infiltration of the underlying muscle<sup>16</sup>. Hemangiopericytoma usually affects dogs' limbs and tends to be locally aggressive, however, with a low tendency to metastasize. A report on the hemangiopericytoma of the orbit in a dog, treated with surgical excision, described no recurrence or metastasis within 12 months after surgery.<sup>17</sup>

Hemangiopericytomas may appear histologically similar to peripheral nerve sheath tumors. The

differentiation of hemangiopericytoma from peripheral nerve sheath tumors can be difficult, since neoplastic cells in peripheral nerve sheath tumors may display similar morphological features as in hemangiopericytoma, and are often arranged in whorls. However, the whorls present in PNSTs are less prominent and not strictly centred on vascular structures.<sup>7</sup> In contrast to HEPs, PNSTs frequently have interlacing wavy bundles of tumor cells, fusiform and serpentine nuclei and variable palisading of neoplastic cells. However, the absence of staining for GFAP, S100 and NSE support a diagnosis of the hemangiopericytoma.<sup>1,7,11</sup>

Hemangiopericytomas poorly respond to chemotherapy and radiotherapy and complete surgical

resection is the only effective therapy for hemangiopericytoma.<sup>18,19</sup> In this case with the use of electro surgery, all the tumor tissue was excised from the interdental gingival. The tumor bed was cauterized to ensure no further regrowth of the tumor.

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### Conflicts of interest

None

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**درمان جراحی همانژیوپریسییتوما در لب یک کره اسب ماده: گزارش درمانگاهی**

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**توصیف بیمار** - یک راس کره مادبان ۱.۵ ساله با وزن حدود ۱۵۰ کیلوگرم برای ارزیابی رشد تومور مانند متراکم در لب پایین به درمانگاه ارجاع داده شد.

**یافته های بیماری** - در معاینه فیزیکی، اسب، یک توده با مرز مشخص، رنگ قرمز مایل به صورتی با ابعاد ۷ × ۵ × ۳.۵ سانتی متر در ناحیه لب پایین مشاهده شد. در ملامسه توده دردناک بود.

**تشخیص رادیوگرافی** - در رادیوگرافی از ناحیه مشخص شد که توده به خوبی محدود، کمی معدنی، غیر تهاجمی به توده عضلانی و لایه پری استنوم و بدون واکنش استخوان اطراف بود.

**درمان و نتیجه** - برداشت جراحی توده تحت بیهوشی عمومی انجام شد. آزمایش میکروسکوپی نمونه نشان داد که سلول های نئوپلاستیک در حلقه های درهم رفته کوتاه به طور تصادفی در یک استرومای فیبروزه و یا میگزوئیدی توزیع شده بودند که یک استرومای کلاژنی آنها را از همدیگر جدا می کرد. در معاینه مجدد اسب بعد از ماه هشت ماه هیچگونه برگشتی از توده مشاهده نشد. **کاربرد بالینی** - تومورهای همانژیوپریسییتوما به شیمی درمانی و پرتودرمانی پاسخ ضعیفی می دهند و برداشت کامل جراحی تنها راه درمان موثر این تومورهاست.

**کلمات کلیدی** - کره مادبان، همانژیوپریسییتوما، رادیوگرافی، هیستوپاتولوژی