

**ACUTE ABDOMEN  
SYNDROME AND  
RADIAL NERVE  
COMPRESSION  
CORRELATED WITH  
DIFFUSE METASTATIC  
MELANOMA IN THE  
LYMPHATIC SYSTEM  
AND SKELETAL  
MUSCLE: CASE REPORT**

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**Abstract:** Melanoma occurs due to changes in melanocytes, where there will be a disordered growth of the cells responsible for skin pigmentation. The objective of the present work was to report a case of melanoma in a female horse, gray, Brazilian Equestrian breed, as well as to correlate this pathology with acute abdomen syndrome and compression of the radial nerve. During the clinical examination, during treatment for acute abdominal syndrome, several masses were observed in the perineal region with a firm consistency, while on rectal palpation it was possible to identify such masses close to large vessels, kidneys and urinary bladder. Due to the findings during the clinical evaluation, the diagnosis of melanoma was deduced, which was confirmed at necropsy after euthanasia due to complications from anesthetic recovery due to compression of the radial nerve.

**Keywords:** Melanoma, Acute abdominal syndrome, radial nerve compression, lymphatic system, metastasis

## INTRODUCTION

Equine melanocytic tumors have been of great concern to owners and veterinarians due to the economic and health consequences of their presence. Several authors agree that all gray horses tend to develop a melanocytic tumor in the long term as there is a predisposition related to coat and age. (Philips et al., 2015; Knowles et al., 2016). Recent studies classify melanoma as a malignant neoplasm or with the potential to become so, since 66% of equine melanocytic tumors eventually become malignant (Scott 1988).

The causes of the development of melanocytic tumors are not yet completely understood, however, the most recent studies indicate that these tumors are secondarily correlated to genetic factors. Thus, melanoma occurs due to mutations in the molecular pathway of melanin metabolism, such

mutations tend to exacerbate the activity of the melanoblasts present, leading to an overproduction of melanin under the dermis, converting the cells into malignant tumors. (Philips and Lembcke., 2013).

## CASE REPORT

A 22-year-old Brazilian Equestrian mare, with a history of acute abdomen syndrome, was treated at ``Hospital Veterinário da União Pioneira de Integração Social`` (HVET/UPIS). Physical examination revealed an elevated heart rate (72 bpm), hypomotility in all four quadrants, restlessness and clinical signs of gastric discomfort. Given this situation, we opted for a nasogastric tube, which was difficult due to resistance near the cardia region, suspecting an obstructive neoplastic process at the site, given that there were also large neoplastic masses in the perineal region, suggestive of melanoma. During rectal palpation, the presence of masses in the lymphatic chain was noted, in addition to displacement of the large intestine (colon) with intense tension of the tapeworms in this segment. The animal presented intense pain and low responsiveness to analgesics, so the patient was referred for exploratory laparotomy.

Dissociative anesthetic induction was performed and, later in the operating room, maintenance with inhalation anesthesia. The animal was positioned in dorsal decubitus and, after antisepsis and placement of the sterile surgical field, a surgical incision was made on the Alba line. Ectopic positioning of the intestinal loops with retroflexion of the pelvic flexure was evident, and the cecum was trapped in the dorsal-cranial region of the cavity. There was great difficulty in removing the colon and cecum from the abdominal cavity, indicating some incarceration process.

After some time of exploration and manipulation, an adhesion of the omentum

was seen at the apex of the cecum, forming an arch through which the larger colon passed and became trapped. A large mass was noted at the base of the stomach, close to the cardia, which probably made nasogastric catheterization difficult. There were other masses in the dorsal-caudal region of the abdomen, close to the abdominal aorta and rectum. Although the location did not allow visualization of the masses, during surgery the suspicion was that it was melanoma, as the mare was an advanced age. The pelvic flexure was exposed and an enterotomy was performed in the region to wash and empty the larger colon. After enterorrhaphy, the intestinal segments were re-inspected, the loops were repositioned and washed with warm lactated Ringer serum. Heparinized solution (5000 iu) and gentamicin solution (6.6 mg/kg) were infused into the abdominal cavity, with the aim of reducing the chances of septic peritonitis and the formation of adhesions. The abdominal cavity was then closed in three layers and sterile dressing of the skin suture was performed. After this, the horse was taken to the anesthetic recovery room.

Post-operatively, the patient did not progress well, having difficulty remaining in position in the anesthetic recovery room. Even performing stretching maneuvers on the thoracic limb and using a soft mattress for decubitus, the animal showed signs of compression of the radial nerve, unable to support itself under the left thoracic limb. It was then decided to immediately administer anti-inflammatories, analgesics and anti-endotoxic drugs (dipyrone and flunixin meglumine, DMSO and hydrocortisone), prokinetics of intestinal motility (lidocaine and calcium), bronchodilators (aminophylline) and multivitamin solutions. After using several medications that could aid in the recovery process, the animal presented

persistent recumbency. After 12 hours, there was considerable worsening in the animal's clinical condition, with pedaling movements and signs compatible with neurological syndrome. Therefore, together with the owner, it was decided to perform euthanasia.

At necropsy it was found that the perineal region was covered by a blackish neoplastic mass (surface and parenchyma), firm, lobulated, which extended to the base of the tail and invaded the entire rectal region up to the sacral and inguinal region. There were neoplastic metastatic nodules, ranging in size from 0.5 to 10.0 cm, over the urinary bladder, left kidney, spread in the mesentery, adhered to the wall of lymphatic vessels of the pelvic and thoracic limbs and the adventitia of large arteries, in addition to infiltrates in musculature and mammary gland. The serosa of the digestive tract had a physiological color; however, the small intestine was slightly hyperemic. In the mesentery of the middle portion of the small colon there was a hemorrhagic area, measuring approximately 4.0 cm. The mucosa of the entire digestive tract was physiological, the lungs were congested and other organs without important changes. Under microscopy, it was found that in the skeletal muscle, serous and muscular regions of the urinary bladder, artery and renal surface there was a proliferative invasion of neoplastic melanocytes, causing tissue destruction. The neoplastic cells showed moderate pleomorphism, with anisocytosis and anisokaryosis. Shape varying from round to polyhedral and marked quantity of blackish granules accumulated and obstructing the cells.

## DISCUSSION

There is currently no consensus as to whether multiple foci in a single horse are metastatic or arise spontaneously as separate, multicentric neoplasms. However, there are several references that provide evidence of lymphatic and hematogenous metastasis. (Murray et al. 1997; al. 2002; Covington et al. 2004) Most tumors can progress to malignant behavior through invasion by either vascular or lymphatic metastasis (Philips and Lembcke., 2013).

Acute abdomen syndrome can be caused secondary to ischemia, which will cause stagnant blood flow, decreased perfusion pressure and, eventually, circulatory failure and tissue damage. The degree of blood circulation and the level of tissue damage determine the outcome of the patient with colic.” Causes of stagnant blood include increased vascular tone, compression of blood vessels by tissue forces, or increased blood viscosity. (Journal of Veterinary Internal Medicine 1990; 4: 183-186)

In the present case, in addition to several melanocytic masses in the region of the cranial and caudal mesenteric arteries, causing a possible reduction in blood flow and consequently reduced gastrointestinal perfusion, there were also masses present close to the radial nerve due to the lymphatic proliferation of melanomas, which is also a predisposing factor for the compression thereof. However, to the authors' knowledge, there are no previous reports of radial nerve compression by melanomas.

## CONCLUSION

Therefore, it is assumed that advanced age and the presence of metastatic melanomas were predisposing factors for acute abdomen syndrome, due to the history of good management and absence of previous cramps. It is also concluded that the presence of diffuse melanomas in lymphatic vessels, including near the region of the radial nerve in the thoracic limb, together with the anesthetic recovery time, caused the horse's difficulty in remaining stationary due to compression of the radial nerve.

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