

DERMAL MELANOMAS IN A GREY HORSE: CASE STUDY

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Abstract

Melanoma is a relatively common type of cancer in horses, particularly in those with gray or white coats. As horses age, the likelihood of developing melanoma increases, and it is estimated that around 80% of aged populations of gray horses will develop the condition. A 20 year-old grey Standardbred female was referred to the Faculty of Veterinary Medicine Bucharest presenting with insidious weight loss over the past year, depression, inappetance, cutaneous masses and pigmented peri-anal masses likely melanomas. Clinical examination revealed normal respiratory rate, cardiac frequency in normal parameters. Different firm well-circumscribed masses were also palpable in the various locations. The X-ray revealed the absence of pulmonary masses or pathogenetic consequences of primary tumor, without modifications of the pulmonary area and the absence of specific pattern lung. The ultrasonographic examination revealed the presence of inhomogeneities with areas of hypoechoogenicity, well delimited by a hyperechogenic capsule. The cytological aspects characteristic of the diagnosis of melanoma were presented and identified regardless of the collection site.

Key words: dermal melanomas, horse.

INTRODUCTION

Melanoma is a relatively common type of cancer in horses, particularly in those with gray or white coats. As horses age, the likelihood of developing melanoma increases, and it is estimated that around 80% of aged populations of gray horses will develop the condition.

Melanoma in horses can manifest as variably pigmented and infiltrative tumors that often present in advanced stages as a multicentric malignancy. These tumors can be located in various parts of the body, including the skin, eyes, and internal organs. While some horses may develop only a few small melanomas that do not cause significant problems, others may develop large or aggressive tumors that can cause pain, discomfort, and other health issues. It's important to note that the potential for equine melanomas to become malignant can vary based on a number of factors, including the location and size of the tumor, as well as the individual horse's age and overall health.

While some older studies have suggested a relatively high incidence of malignancy among equine melanomas, more recent clinicopathological studies have provided varying results. As noted, one study reported a

14% incidence of malignant dermal melanomas, while another study of Lipizzaner horses found a 50% incidence of melanomas but no clinical evidence of malignancy.

It appears that in the veterinary literature, melanocytic tumors have often been categorized as either benign or malignant melanomas. However, there are actually four distinct clinical syndromes that are recognized: melanocytic nevus, dermal melanoma, dermal melanomatosis, and anaplastic melanoma.

Dermal melanomas and dermal melanomatosis are histologically similar lesions, and they are differentiated based on their clinical features. Dermal melanomas present as discrete masses, while dermal melanomatosis involves multiple cutaneous masses, with at least one of the masses presenting in a typical location. As mentioned earlier, these typical sites include the undersurface of the tail, anal, perianal and genital regions, perineum, and lip commissures. Anaplastic melanomas, on the other hand, are considered the most aggressive form of melanocytic tumors and are characterized by rapidly growing masses that are invasive and have a high metastatic potential. Melanocytic nevi, on the other hand, are typically benign

and do not tend to progress into malignant forms.

It's worth mentioning that not all melanomas in horses will become malignant, and some may remain benign throughout the horse's lifetime. However, given the potential for these tumors to become malignant and cause health issues, it's important for horse owners and veterinarians to monitor any melanomas that develop and seek appropriate treatment if necessary. This may include surgical removal, radiation therapy, or other interventions depending on the specifics of the case.

MATERIALS AND METHODS

Case history and clinical findings

A 20 year-old grey Standardbred female was referred to the Faculty of Veterinary Medicine Bucharest presenting with insidious weight loss over the past year, depression, inappetence, cutaneous masses and pigmented peri-anal masses likely melanomas. Clinical examination revealed normal respiratory rate, cardiac frequency in normal parameters. Different firm well-circumscribed masses were also palpable in the various locations.

Additional diagnostic testing included bloodwork, thoracic radiographs, ultrasound, and medullogram (Figures 1-7).

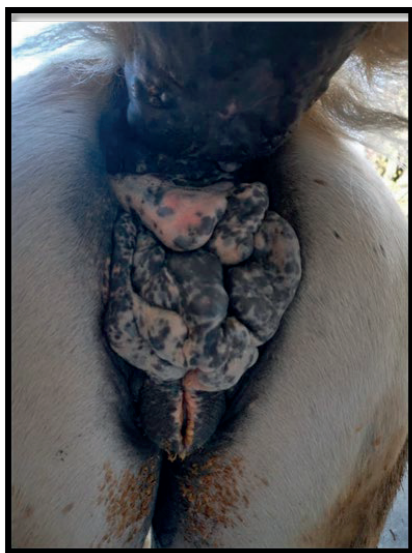


Figure 1. Large confluence of nodular and plaque-like melanomas on the ventral tail and perineum



Figure 2. Diffuse firm mass at the level of the olecranon



Figure 3. Diffuse mass at the level of the whiter

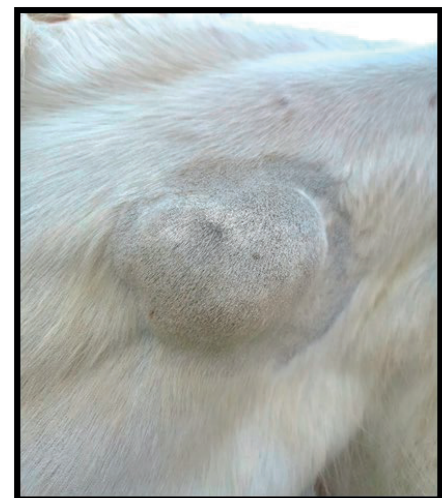


Figure 4. Localized firm and well-circumscribed mass at the neck level



Figure 5. Ultrasound guided puncture from the mass for cytology exam



Figure 6. Puncture from the anal mass for citology exam

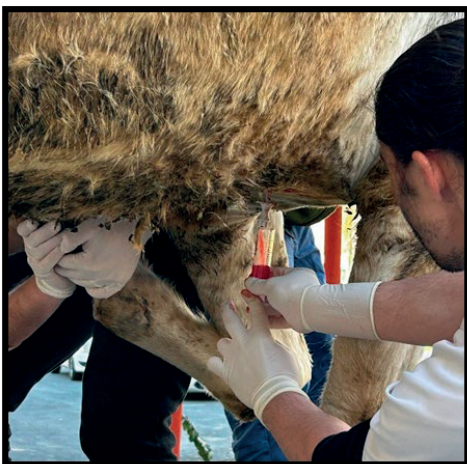


Figure 7. Sternal Puncture for medullogram

For the cytological examination, the slides obtained by fine-needle aspiration were stained with May Grunwald-Giemsa stain.

RESULTS AND DISCUSSIONS

In regard of the hematological examination the parameters identified were within the normal values being a great indicator of a an systemic complications on the organism (Figure 8).

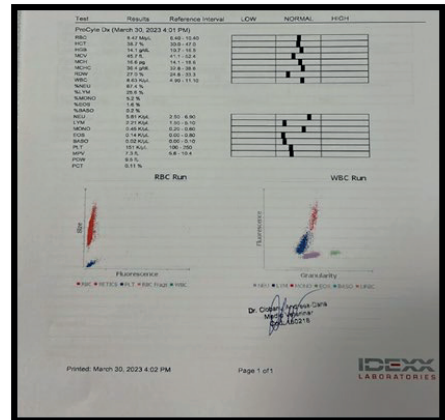


Figure 8. Result of hematological examination, horse, standardbred

The X-ray revealed the absence of pulmonary masses or pathogenetic consequences of primary tumor, without modifications of the pulmonary area and the absence of specific pattern lung (Figures 9, 10).

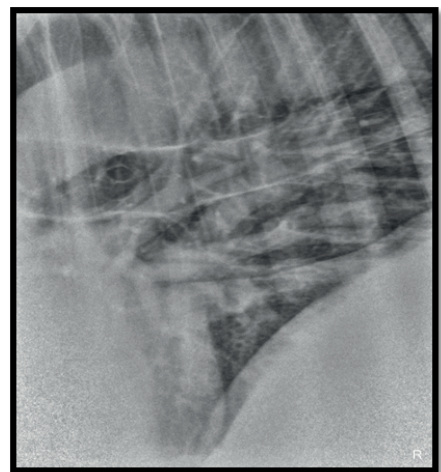


Figure 9. X-ray cardiac pulmonary lobe - Normal X-ray image

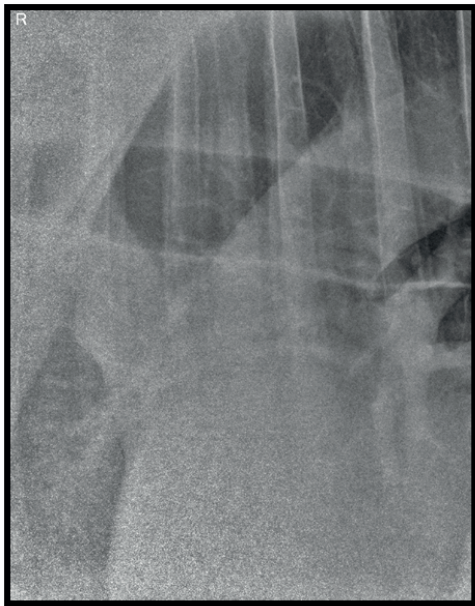


Figure 10. X-ray apical pulmonary lobe - Normal X-ray image

The ultrasonographic examination revealed the presence of inhomogeneities with areas of hypoechogenicity, well delimited by a hyperechogenic capsule (Figures 11, 12).



Figure 11. Ultrasound exam on the well-circumscribed mass at the neck level

Dermal melanomatosis is most commonly observed in horses that are over 15 years old, and the present study included a female with age above 15 years old. Small melanocytic tumors typically do not cause any clinical signs

and may only be noticed as a cosmetic blemish. However, larger tumors can cause physical obstruction of the anal sphincter, penis and prepuce, or vulvar commissure, leading to issues such as dyschezia (difficulty defecating), dysuria (difficulty urinating), and difficulties with coitus and parturition. In the present study, the most common clinical complaint reported was difficulty defecating, which is consistent with the obstructive effects of the perianal tumors.



Figure 12. Ultrasound exam on the well-circumscribed mass at the neck level (arrow - needle)

Gross description of the masses

The grey-coated examined mare presented multiple pigmented cutaneous-subcutaneous masses. The first tumor was located at the ventral part of the tail base, extending for approximately 25-30 cm of the tail's length, poorly defined, pigmented, involving both the perineal and the perianal areas. The skin was thick, firm, showing a large plaque-like mass consisting of multiple dark pigmented nodules, 1-3 cm in diameter, located on the tail and several partially pigmented (maculated aspect) 2-5 cm nodules on the perineum and perianal region. Two other subcutaneous masses were noted on the right side, one being localised lateral to the withers, 10-15 cm in diameter, poorly defined, and another one on the lateral cervical region, in the cranial half, well-circumscribed, spherical to irregular shaped, firm, 5 cm in diameter. Furthermore, in the right parotid area, between the base of the

external ear and the ramus of the mandible, there was observed another 5 cm firm pigmented subcutaneous mass. Two other pigmented lesions were located bilaterally in the axillary region, having approximately 5 cm diameter in the right side and 7-8 cm in the left side, both being represented by multiple subcutaneous coalescing firm irregular-shaped 1-2 cm nodules. Fine needle aspiration was performed on all the masses and slides were submitted for cytological examination.

Cytological examination

All masses showed similar cytological aspects (Figures 13, 14, 15). The slides were of high cellularity represented by well-differentiated round to oval melanocytes with variable amounts of intracytoplasmic melanin pigment granules showing mild to moderate anisocytosis and anisokaryosis. The nuclear: cytoplasm ratio is increased and variable sized prominent nucleoli can be encountered. No mitotic figures were noted in the examined slides. Also, melanophages with vacuolated cytoplasm were occasionally encountered. Slides background was mostly represented by melanin pigment from ruptured cells and blood contamination.

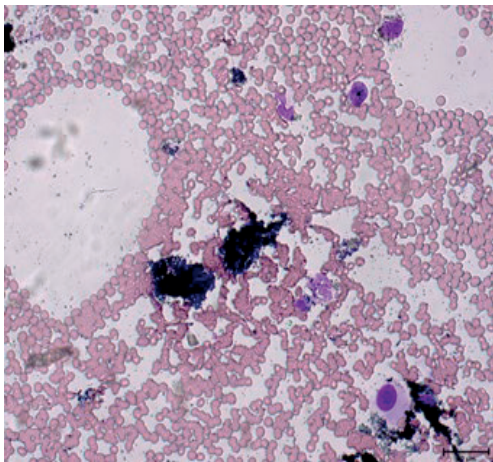


Figure 13. Cytological aspects of the lateral cervical mass, 400x, M.G.G. - Several melanocytes with mild anisokaryosis and anisocytosis and one vacuolized macrophage are noted

There are acknowledged four major types of equine melanocytic tumors: melanocytic nevus, dermal melanoma, dermal melanomatosis and anaplastic malignant melanoma. Dermal equine

melanoma can be benign or malignant, being grossly described as isolated masses located on the perineum and the ventral tail area, that can affect young or older horses.

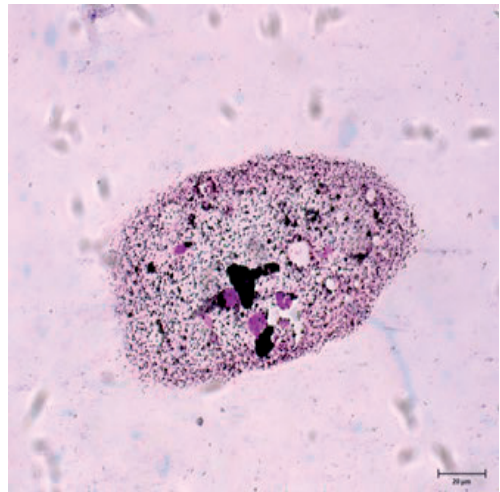


Figure 14. Cytological aspects of the tail plague-like mass, 400x, M.G.G. - Anisocytosis and anisokaryosis are observed. Numerous pigment granules are seen in the background

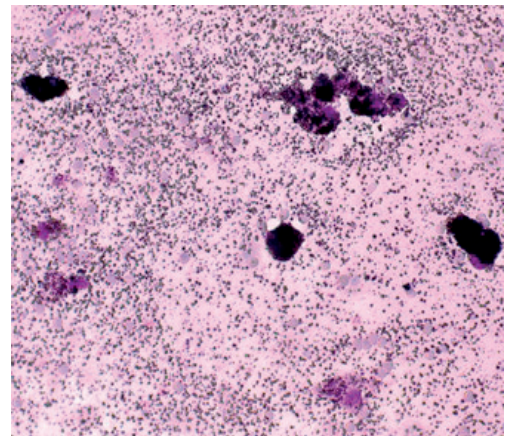


Figure 15. Cytological aspects of the axillary region mass, left side, 400x, M.G.G. - Neoplastic cells contain abundant amounts of melanin pigment and the background is marked by large amount of black pigment granules

On the other hand, melanomatosis is distinguished by multiple irregular coalescing lesions disseminated on the ventral tail (93.3% cases), perianal (43% cases) perineal, crest and parotid salivary gland regions and other external or internal locations,

being frequently encountered in older than 15 years grey horses. Many authors describe dermal melanomatosis having a high metastatic rate, considering this form a malignant stage of dermal melanoma. Thus, cytological aspects correlated with gross lesions features and clinical aspects sustain the provisional diagnosis of dermal melanomatosis. For further evaluation of the tumors, biopsy samples from the masses should be provided for histopathological examination.

Dermal melanomatosis is a condition characterized by the presence of multiple cutaneous masses, with at least one of the masses presenting in a typical location. These typical sites include the undersurface of the tail, anal, perianal and genital regions, perineum, and lip commissures. This condition is most frequently seen in mature horses, and it is associated with a slightly older average age of 17 years. However, studies have shown that the mean age of horses with dermal melanomatosis was less than 10 years.

Unfortunately, this condition is not amenable to surgical resection, and it is likely to be associated with visceral metastasis.

CONCLUSIONS

The accumulation of data from anamnesis, clinical examinations and paraclinical investigations led to a definite diagnosis of melanoma. The X-ray revealed the absence of visceral metastasis, being in accordance with the literature. The ultrasonographic examination revealed the presence of inhomogeneities with areas of hypoechogenicity, well delimited by a hyperechogenic capsule. The cytological aspects characteristic of the diagnosis of melanoma were presented and identified regardless of the collection site.

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