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June 2014

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by Dr James Meyer, BSc (PV), DVM

# Melanomas

## in the grey horse



*Nearly everyone involved in the equine world knows of, or has, a grey horse with melanomas. They are one of the most common types of neoplasm (or cancer) in grey horses, with greater than 80% of grey horses over the age of 15 years having melanomas.*

*In this article, Dr James Meyer, an equine dental vet from the Adelaide Plains Equine Clinic, provides a thorough understanding of the condition and outlines the options you can discuss with your veterinarian should your horse develop melanomas.*

Researchers suggest that melanoma development is 'inevitable' in grey horses, provided they live long enough. These kinds of suggestions could rightly lead a person with grey horses to become quite concerned, but to quote a learned colleague of mine: "Most horses with melanomas will die with melanomas and not of them."

Given that your grey horse will most likely develop melanomas in their lifetime, but should probably live to a ripe old age and succumb to some other disease, why do we care about these ubiquitous neoplasms?

Unfortunately, while they aren't often fatal, melanomas can grow and physically impact the health of your horse, causing welfare concerns or secondary conditions, such as colic.

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“ We know these tumours are often slow growing and most horses won't die of them, but as they grow and spread, they can result in physical impairment of normal functions, or cause pain and discomfort to your horse.



## Development

Where do melanomas come from and what are they made of?

'Melan' is Greek for 'black', while 'oma' is used to describe tumours or abnormal growths. Melanocytes are the cells that provide the black pigment to the skin, and when their DNA is damaged or defected they can become cancerous. The damaged DNA forces the cell to replicate beyond the body's ability to destroy it and results in a build-up of cancerous cells forming a tumour, which we can then be seen as a melanoma.

Cancers have traditionally been classified as benign or malignant. The former is often associated with a better prognosis as the tumours are less likely to be invasive, or spread (metastasise), while the latter tend to be much more aggressive and likely to invade other organs. Most tumours are classified as one or the other, with human melanomas tending to be very malignant. Equine melanomas, on the other hand, have traditionally been classified as benign, but this doesn't help to explain their apparent spread around the body over time.



*Melanoma at the base of the tail. This solitary mass, less than 2cm large, makes this a Stage 1 Equine Malignant Melanoma (EMM). Photo courtesy Adelaide Plains Equine Clinic.*

Some researchers have explained this by stating that multiple melanomas are not the spread of a single mass, but more likely individual tumours arising at the same time. The current consensus is that equine melanomas are actually part of a sliding scale; beginning with small, benign tumours that have the potential to progress to extensive malignant masses, and they are now all often referred to as equine malignant melanomas (EMM).

**Presentation**

The most common presentation of EMM is a solitary mass, or multiple small (less than 2cm) masses, on the dock or around the anus. These are often found on grey horses around the age of 13 years while you are grooming or during a routine veterinary physical examination. These tumours are classified as Grade 1 or 2 out of 4 (See Table 1) and tend to be quiescent, maintaining their size for months or years.

From this point, the tumours may slowly spread with other common sites (which may present before the tail or perineum masses), including the commissures (corner) of the lips, sheath, behind the jaw, the eyelids and below the ears.

Table 1. Tumour classification

Stage	Number of Tumours	Diameter	Dissemination (Spread)	Growth Pattern
0	None			
1	Single	<2cm	None	Slow
2	Multiple	<2cm	None	Slow
3	Multiple	<4cm	Present	Slow
4	Multiple	>4cm	Present	Rapid

“While equine melanomas have traditionally been classified as benign, this doesn’t help to explain their apparent spread around the body over time.



*Melanomas located in the sheath of a 22-year-old grey gelding. There is localised oedema (swelling) present, due to blockages of lymphatic drainage.*

Many of these may grow up to 4cm and begin to join with other local melanomas and would be considered Stage 3 out of 4. The final stage involves visceral (or internal) spread of the melanomas, which can be found in muscle, the lungs, abdominal organs or other internal structures. This process can take many years and, as such, many horses may pass away from other conditions before the melanomas become a problem.

**Equine malignant melanoma (EMM) disease staging**

The consensus on EMM now is that rather than discreet benign or malignant forms, it is actually a continuum of disease that spends many months to years quiescent, but still has the potential to spread and develop.

EMM is a very typical disease to diagnose, but can be definitively proved with a surgical biopsy and histopathology. The good news is there is no predilection towards mares or geldings, and testosterone plays no role as stallions do not have a higher incidence of melanomas. It’s also worth checking your non-grey horses from time to time as well. They also have melanocytes to give them their colour and there are rare cases of melanomas in these horses.



The consensus on equine malignant melanomas is that, rather than benign or malignant forms, EMM is actually a continuum of disease that spends many months to years quiescent, but still has the potential to spread and develop.



*Stage 4 equine malignant melanoma (EMM) of the perianal and vulva region in a 22-year-old grey mare. Masses like this can lead to difficulties passing manure. Photo courtesy of the Adelaide Plains Equine Clinic.*



We can't show you his face



This is Dr Rob.

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We can't show you his face, but he can show you his tool.

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## Consequences

We know these tumours exist, we know they're often slow growing and usually horses won't die of them, so why do we care? Unfortunately, as they grow and spread, they can result in physical impairment of normal functions, or pain and discomfort to your horse. Perianal masses can infiltrate the sphincter muscles and lead to incontinence, or restrict the passage of manure altogether, resulting in faecal impaction and colic. Tumours in the throat latch area can lead to restriction of head movement, and potentially pain when eating and drinking.

Melanomas can also spread to organs, such as the eye, requiring removal, or abdominal organs, resulting in colic. Tumours can also grow together and outlive their blood supply, resulting in ulceration and secondary bacterial infections, while infiltration of muscle can lead to non-healing fissures.

## Treatment options

Hopefully this has imparted some import to the humble EMM, but thankfully all is not doom and gloom. Many horses will lead long and happy lives without any major ill-effects of their melanomas. However, should these become an issue, or you wish to attempt to nip them in the bud early, there are a number of current treatment options with their relevant successes and pitfalls.

## Surgery

Let's do surgery! You'd be hard pressed to find a veterinarian who doesn't enjoy a bit of surgery and surgical removal of tumours is one of the two big solutions in effective treatment. It is important, however, to acknowledge when this is, and isn't, an appropriate course of action. It is a good idea to consider surgical removal of Stage 1 or 2 tumours that can be removed in their entirety. Even if at the time there are microscopic, tumours will still grow regardless, so removal of these masses and preventing them from growing may extend the period of comfort for your horse, especially for those in the perianal area.



*Above: Dr Elizabeth Herbert injecting a perianal melanoma with Complete Freund's Adjuvant vaccine. Photo courtesy Adelaide Plains Equine Clinic.*



*Above: Local anaesthetic preparation prior to enucleation (removal) of the left eye, which had been infiltrated by a melanoma. Photo courtesy Adelaide Plains Equine Clinic.*

*Left: A 22-year-old grey gelding after successful removal of his left eye, which had been infiltrated by a melanoma. Photo courtesy Adelaide Plains Equine Clinic.*

This month's contributor to the health feature from

## **Equine Dental Vets**

**James Meyer, BSc (PV) DVM**



Dr James Meyer completed his veterinary degree in the Inaugural Class at the University of Adelaide, South Australia. He began riding horses at the age of three and worked his way through Hacking, Dressage and Eventing. James currently works at Adelaide Plains Equine Clinic, South Australia, and is an active member of both the Pony Club Association of SA and Equine Veterinarians Australia. His main interests in equine practice are in surgery, as well as preventative medicine in pleasure horses. Visit: [www.adelaideplainsequine.com](http://www.adelaideplainsequine.com).

## Treatment Options Summary:

### Surgery

- Good for Stage 1-2 EMM
- May not stop other tumours forming
- Sometimes difficult due to tumour location
- Can be good for palliative treatment of larger masses

### Cimetidine

- Treats multiple tumours at once
- Easily available
- Long term treatment required
- Low success

### Cisplatin

- Have to treat each tumour individually

Unfortunately, surgery is less beneficial in more advanced stages of EMM and may only be useful to remove solitary masses causing secondary problems, such as manure impaction. Tumours in the throat latch area are often also inoperable, due to the complexity of the surgery, as this region has many important anatomical structures, such as the carotid artery, jugular vein and salivary gland.

### Chemotherapy

A number of drugs are available on the market for the local or systemic treatment of EMM. Cimetidine is a widely used medication, available over the counter and drew its popularity from a study in 1990. Given orally, this is a systemic medication that can be used to treat all of the tumours on a horse. Clinical success and continued research, however, has shown it to have poor efficacy but, due to its availability and systemic action, it is still a popular option for treatment.

Another popular option is cisplatin. It can either be injected into a tumour or impregnated beads can be placed in the tumour in conjunction with, or in replacement of, surgery. It acts by binding DNA in the cells it comes into contact with, preventing them from replicating, and has been shown to be effective in reducing tumour size. However, for horses with large numbers of masses, or masses with large bulk, it can become an expensive and highly toxic exercise with limited overall success for the patient.

Other less researched medications include toremifene (a cytotoxic preparation) and frankincense (maybe the three wise men were wiser than we thought!).

### Vaccination and immunotherapy

Injection of DNA signals to create interleukin - a component of the immune system - has been widely researched for other tumour types and recently tested in EMM. By injecting it into the tumour, immune products are created at the site of the disease and show some success in reducing tumour size.

Vaccinations are also a hopeful frontier for cancer therapy. At Adelaide Plains Equine Clinic, we are currently working with researchers to trial a vaccine known as Complete Freund's Adjuvant. A very old preparation that acts as an immune stimulant, we are using it in a new way by injecting it into melanomas and potentially stimulating the immune system to attack the local (melanoma) cells.

Other vaccines aim to stimulate a response by surgically removing tumour cells, growing them and re-injecting them near lymph nodes to expose the cells to the immune system - this process is known as an autologous vaccine. Finally, some vaccines target specific tumour cell products or processes, such as the production of melanin pigment.

### Conclusion

Equine malignant melanomas are an inevitable part of owning a grey horse. They tend to present in adult horses, and may take many years before they impact on the health and wellbeing of your horse. Regularly checking horses without melanomas can aid in early detection and widen your treatment options, while monitoring existing tumours can reveal progression of disease and the need for intervention.



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