Skin tumors in horses

Melanoma is a malignant skin tumor of horses. Although many melanomas grow slowly and do not spread, we know that some will grow in to tissue around the primary site and may spread throughout the body of horses. Melanomas are seen commonly in horses with dilute coat color (white or grey), but may occur in horses of any color. Although these tumors can occur in horses of any age, melanomas are more common in horses as they age. One published study indicates that roughly 80% of grey horses will develop equine malignant melanoma (EMM) by the time they are 15 years old. Some horses may only have a few tumors, others will have many. Thoroughbreds, Quarter Horses and Arabian horses are all breeds of horses that commonly develop melanomas.

Melanomas are a serious problem for some horses. The cause of these tumors is not known and there are few effective treatments for invasive or multicentric tumors.

Another type of malignant skin tumor in horses is squamous cell carcinoma (SCC). This tumor may occur on any horse, but typically is seen in Paints and Appaloosa horses and horses with albinism (pink skin areas). Typical SCCs appear as ulcerated and thickened areas of skin; some may appear to as cauliflower-like masses growing out of skin.

We have been conducting a research to determine the underlying cause(s) of these tumors, how to detect and prevent them, and how to more effectively treat them. We have developed a new type of therapy – high-frequency irreversible electroporation (H-FIRE) – to treat these tumors. The treatment works by applying electrical energy to tumor cells (with electrodes) that causes the formation of large pores in the tumor cells, leading them to “leak” and to die. We have treated several types of tumors with H-FIRE and it appears to be effective in killing some tumor cells and reducing tumor volumes.

Preliminary studies

We have now treated a limited number (4) of horses with electroporation therapy, to determine if the treatment will arrest the growth of the tumor. While the information gained from these very preliminary studies has been helpful, you should be aware that we have no information to suggest that this treatment will work to reduce the growth of equine melanomas or squamous cell carcinoma. Results shown in our laboratory data supports an ongoing clinical trial to determine dose and acute effects of treatment H-FIRE.

What could be done for your horse?

We (your veterinarian, working in concert with us) would like to evaluate your horse for treatment. First, a clinical health database will be obtained on your horse. This will include taking a history, a complete physical examination, and blood tests. We will also ask to measure and photograph selected melanomas on your horse as documentation. If this information indicates your horse is a candidate for therapy, we will then consider treatment of some of the melanomas (if multiple tumors are present) or squamous cell carcinomas.
Treatment

Your horse may receive treatment as follows:

- Your horse will be examined on the day of treatment for general health and well-being, and a history will be obtained/updated
- The horse will have blood sample drawn for laboratory evaluation of health,
- The tumor site will be shaved (if necessary), cleaned, and then photographed and measured
- Your horse, if judged to be in acceptable condition for treatment, will be sedated by intravenous injection with a routine sedative
- Electrocardiographic leads will be placed to monitor heart rate and rhythm during therapy,
- The site of treatment will be cleaned again and then infiltrated with lidocaine, to control the perception of pain,
- Treatment will be administered by pushing sharp electrodes into the tumor (probably at multiple sites) and then an electrical pulse treatment will be administered; (a picture of a typical treatment can be seen below)(treatment of an equine sarcoid with H-FIRE)

- Following treatment, we will observe the horses for at least an hour before discharge. There will very likely be swelling at the site of treatment,
- Your veterinarian will discuss and document (in writing) the exact procedure(s) to be used. It is very likely that multiple treatments, extending over days/weeks/months may be used.

We would like to have the site of the tumor photographed periodically to assess the effects of treatment and to have copies of these photographs sent to us for evaluation of effects.

Are there any possible side effects of treatment?

We will observe closely for unwanted effects, including fever, local irritation, skin breakdown, discharge or other clinical signs indicating systemic problems. If these develop, you should call us and we can discuss, with you and your regular veterinarian, how to treat these problems.

It is possible that some horses may develop changes in heart rate and rhythm during the treatment procedure. This is carefully monitored. Although it is not likely, some horses may become severely ill as the result of treatment or if there is significant and rapid destruction of tumor. You should be aware of the possibility of severe and significant conditions developing during therapy and may chose not to enroll your horse in this clinical trial.
We do expect that tumors will react to the treatments, and there may be tumor swelling, discharge, ulceration, and perhaps shrinkage. We will manage any of these effects with cleansing and standard wound care.

How can you get more information?

Please contact your veterinarian, who will be supervising this treatment.

**Client affirmation and consent:**
1) I have read this description of the proposed experimental therapy and discussed any questions about this experimental therapy with Dr. Mike Cissell (VTH Surgeon) and/or other veterinarians associated with this study.
2) I understand this is an **unproven therapy** for tumors and that it may **have no beneficial effects** for my horse and **may have harmful effects on my horse**.
3) I certify that I am the owner of this horse or have been granted permission by the owner of this horse to enroll the horse for this study.
4) I understand that I have an obligation to pay for hospitalization, medical and laboratory charges for this horse during the period of study. I understand that the costs of biopsies and experimental therapies will be paid for by the study director or his designated veterinarian.

I affirm and consent to this with my signature:

Client: _______________________________________________________

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Veterinarian: __________________________________________________

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Contact information for veterinarian: _______________________________

_________________________________________________________________

Horse: ______________________________

Address: ______________________________

_________________________________________________________________

Phone/email contacts: ______________________________

Client comments: ______________________________