Treatment of infiltrative skin malignancies in horses using High-Frequency Irreversible Electroporation [H-FIRE]: Phase I-II clinical trial

Purpose

To assess the effectiveness of a novel therapy that delivers high voltage, high frequency electrical pulses in the treatment of invasive skin cancer (SCC and EMM) in horses.

Background

Infiltrative skin malignancies (equine malignant melanoma [EMM], squamous cell carcinoma [SCC]) are common in horses, but current methods of therapy are ineffective against infiltrative and/or recurrent SCC and most cases of EMM. Irreversible electroporation (IRE) is a novel therapy for ablation of infiltrative malignancies. It destroys tumor cells using high voltage, high frequency electrical pulses, administered through implanted electrodes, by permanently de-stabilizing tumor cell membranes. H-FIRE, a variant of IRE that uses very rapid pulse polarity switching, can be done in sedated animals. Depending on the characteristics of the tumor, treatment is rapid (minutes) and recovery uncomplicated.

If H-FIRE is found to be effective therapy, it could be used immediately for treatment of horses with EMM and SCC, and could potentially translate into therapy of similar tumors in dogs and humans.

Eligibility

- Horses must be between 2 and 15 years of age.
- Horses must have no other significant clinical disease that would interfere with delivery of treatment or subsequent observations.
- At least one tumor must be accessible for placement of H-FIRE electrodes and for photographs and measurements to be obtained.

Study Design

Horses will undergo an examination to determine eligibility for the study. Once enrolled, the horse will be scheduled to undergo the H-FIRE procedure. The horse will be sedated and diagnostic tests (including ultrasound) will be used to determine the boundaries of the target tumor. The H-FIRE electrodes will be placed and the treatment administered. Once the patient is determined to be medically stable, s/he will be released to his/her owner.

Follow-up checks are required at 2 weeks, 4 weeks, 8 weeks and 16 weeks. At each recheck, photographs and measurements of the treated tumor will be taken and additional evaluations of the treated tumor (and any untreated tumors) will be performed.

Compensation

The owner is responsible for the cost of the initial consultation to determine eligibility (approx. $180). Once the horse is enrolled, all study costs (treatment, drugs, laboratory sample analysis) will be covered, including recheck appointments.

All clinical trials carry risks. The hospital assumes no responsibility for the cost of treatment of complications or animal replacement in the event of a catastrophic event.

Contact

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If your query is urgent, please call the Large Animal Hospital on (540) 231-9043 and ask for the large animal veterinarian on duty.