SUCCESSFUL ELECTRICAL CARDIOVERSION OF SUSTAINED VENTRICULAR TACHYCARDIA IN AN ADULT HORSE

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Introduction
Sustained ventricular tachyarrhythmias are poorly tolerated and can be life-threatening. Prompt antiarrhythmic therapy is required but does not always result in successful cardioversion, thereby leading to signs of cardiac failure.

Materials and methods
A 16-year old mare was presented because of weakness, respiratory distress and a pulse rate of 180 bpm due to sustained monomorphic ventricular tachycardia. Despite correction of electrolytes and treatment with steroids, magnesium, lidocaine and amiodarone, cardioversion could not be obtained. Internal electrical cardioversion was therefore attempted.

Results
Two cardioversion catheters were inserted in the standing horse: one via the jugular vein into the right ventricle and one via the percutaneously punctured carotid artery into the left ventricle. Catheter positioning was guided by cardiac ultrasound and by pressure monitoring via the catheter tip. During a short general anaesthesia with ketamin and midazolam, delivery of 1 biphasic, synchronized 360 joule shock instantaneously terminated ventricular tachycardia. Because of a short episode of complete atrioventricular block a second shock was delivered after which normal sinus rhythm returned. Recovery was uneventful. The horse gradually returned to competition (jumping) and no complaints were reported at 6 months follow-up.

Discussion
Sustained, ventricular tachycardia, resistant to antiarrhythmic treatment with magnesium, lidocaine and amiodarone, can be terminated by electrical cardioversion. Due to the horse's size, external electrical cardioversion is unlikely to be successful. Internal electrical cardioversion by a combined transvenous and transarterial approach is recommended to place one cardioversion catheter in each ventricle. This first successful transvenous cardioversion opens new perspectives for the management of ventricular tachyarrhythmias.

DETERMINATION OF COEFFICIENT OF FRICTION BETWEEN THE EQUINE FOOT AND DIFFERENT GROUND SURFACES: AN IN VITRO STUDY

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Introduction
Slippery surfaces are a continuous concern in equine veterinary practice both during treatment and orthopaedic work ups, especially when horses have to trot on circles.[1] Sliding of the equine foot on the ground with the potential of injury is prevented if the horizontally acting accelerating or decelerating forces on the foot do not exceed maximal friction. Friction can be calculated and therefore anticipated if the coefficient of friction (μ) between the foot of the horse and the particular ground surface is known. The objective of this study was to measure the friction between shod and unshod feet and different ground surfaces.

Materials and Methods
Friction between shod and unshod cadaver equine hooves (n=26) and different ground surfaces (bricks, tarmac and rubber) was determined by pulling the hooves horizontally in a uniform motion. Horizontal forces (Fh) were measured on a force plate, and with a digital electronic portable force meter. The coefficient of friction (μ) was calculated.[2]

Results
The highest coefficient of friction was found between an unshod equine foot and a small concrete brick surface (μ = 0.94), which was significantly higher than the friction between an unshod foot on smooth tarmac (μ =0.82) (P=0.03) and a shod foot on smooth tarmac (μ=0.45) (P=0.008). Unshod feet experienced more friction with the hard surfaces, whereas shod feet had a better hold on the rubber surfaces.

Conclusions
Coefficients of friction could be used to estimate the possibility of injuries occurring in the equine industry during exercise and/or lameness or pre-purchase examinations.

References
1. Dyson SJ (2000) Poor Performance in the Sports Horse: Proceedings of the American Veterinary Medical Association.
2. Halliday D (2001) Fundamentals of Physics, USA: Wiley & Sons Inc. pp.