COMPARISON OF SMARTPHONE-BASED AND STANDARD ELECTROCARDIOGRAPHY IN HEALTHY HORSES

L. Vera, G. Van Steenkiste, A. Decloedt, D. De Clercq and G. van Loon
Equine Cardioteam Ghent University, Faculty of Veterinary Medicine, Ghent University, Belgium.
Email: lisse.vera@UGent.be

Background: Electrocardiogram (ECG) recording is necessary to diagnose arrhythmias but is not always available in first-line equine practice. Good quality smartphone-based ECGs would facilitate diagnosis of arrhythmias in the field.

Objectives: To evaluate the quality and ease of use of different device-app combinations.

Study design: Experimental.

Methods: In 24 healthy horses a standard ECG (Televet100, Kruuse) was recorded at rest, simultaneously with different smartphone-based ECGs. Three AliveCor devices (veterinary AC-002, human AC-009 and self-adapted AC-009 device) were tested combined with two applications (AliveCorVet (veterinary) and Kardia (human) application).

To evaluate the ease of use, time to acquire a 60 s ECG was registered. For the self-adapted AC-009 device, each electrode was connected with a 90 cm wire to a self-adhesive electrode positioned near the left withers and the left apex beat area. ECGs were blinded and scored for baseline wander and presence of artefacts, P wave visibility and overall quality. Smartphone-based ECGs were compared with the standard ECG using the non-parametric Friedman's analysis of variance by ranks.

Results: Only the adapted AC-009 scored equally compared with the standard ECG for all criteria, independent of the application used. The AC-002 combined with the AliveCorVet application scored equally for baseline wander and presence of artefacts and overall quality, but P wave visibility was significantly lower. Recording times (median [range]) were shortest for the adapted AC-009 (67 s [60–200 s] with AliveCorVet and 60 s [60–105 s] with Kardia), slightly longer for the AC-002 (100 s [60–420 s] with AliveCorVet and 70 s [60–140 s] with Kardia), and longest for the AC-009 (110 s [60–480 s]) with AliveCorVet and 70 s [60–350 s] with Kardia), but differences were not significant.

Main limitations: Limited number of horses were used.

Conclusions: The veterinary AC-002 device combined with the AliveCorVet application can be used to record good quality ECGs in horses. The adapted AC-009 device further improves P wave visibility.

Competing interests: None declared.

Ethical animal research: The procedures were approved by the Ethical Committee, Faculty of Veterinary Medicine, Ghent University (EC 2018/111). Informed owner consent was obtained.

Sources of funding: Lisse Vera and Glenn Van Steenkiste are funded by the Research Foundation Flanders (FWO-Vlaanderen).

MEDINE

INVESTIGATION INTO THE PREVALENCE OF EQUINE RECURRENT UVEITIS IN NORTH AMERICA

T. F. S. Cassell, J. H. Burford and M. Duz
School of Veterinary Medicine and Science, University of Nottingham, College Road, Sutton Bonington, Loughborough, Leicestershire, LE12 5RD, UK.
Email: svytfc@nottingham.ac.uk

Background: Equine recurrent uveitis (ERU) has only been evaluated on small populations or from single centres, so is hardly representative of the general equid population.

Objectives: Calculate incidence proportion of ophthalmic disease and prevalence of ERU in a large population of equids.

Study design: Retrospective data analysis.

Methods: Data available for the study included electronic medical records from 439,762 equids from 12 first-opinion and mixed first-opinion/referral equine practices from the USA and Canada between 2006 and 2017. Free-text data were mined using a methodology previously validated for equine data. Records referring to cases of ophthalmic disease and ERU were identified to determine the incidence proportion of ophthalmic disease and the prevalence of ERU. An arbitrary cut-off of 365 disease-free days was used to define a case of ophthalmic disease as a new case and not a recurrence of a previous condition.

Results: 33,859 equids suffered 70,263 cases of ophthalmic disease (7.7%; 95% CI: 7.6–7.8%). ERU was identified in 2,009 equids (0.46%; 95% CI: 0.44–0.48%). ERU was responsible for 5.9% (95% CI: 5.7–6.1%) of all ophthalmic disease cases. There was breed predisposition towards Warmbloods and Thoroughbreds (34.50% and 25.58% of all ERU cases respectively); however, Appaloosas (2.15%) were under-represented.

Main limitations: This was a retrospective study and equids contributed over a variable length of time. The cut-off used might have slightly underestimated the prevalence of ophthalmic disease. Results are representative of a predominantly first-opinion population, so may differ from previous studies performed on referral populations.

Conclusions: Ophthalmic disease is common in equine practice; however, the prevalence of ERU was found to be lower than suggested by previous studies but remains a relatively common occurrence. There was a clear breed disposition found, but the percentage of Appaloosas diagnosed with ERU was lower than in previous studies.

Competing interests: None declared.

Ethical animal research: The study was reviewed and approved by the Ethics Committee, School of Veterinary Medicine and Science, University of Nottingham.

Sources of funding: School of Veterinary Medicine and Science, University of Nottingham. All data were anonymous and retrospective. Animal owners' consent was not sought.