Tagung über Pferdekrankheiten
mit begleitender Fachausstellung / with associated trade exhibition
im Rahmen der EQUITANA
Essen, 15. und 16. März 2019

Arrhythmie
Kolonobstipation
Arthroскопie
Stammzelltherapie
Antibiotikatherapie
Halswirbelsäule

Investoren in der Pferdemedizin: „zum Wohle der Tiere“?
FREITAG, 15. MÄRZ 2019
FRIDAY, 15 MARCH 2019

* Sprache: Englisch/Deutsch mit Simultanübersetzung
Language: English/German with simultaneous translation

from/ab
700  REGISTRATION/ANMELDUNG

815  HUSKAMP, N. H.
     Begrüßung/Welcome

820  VAN LOON, G.
     Clinical relevance of heart arrhythmias

845  HALLOWELL, G. B.
     Managing large colon impactions and displacements in the field

900  VAN LOON, G.
     Atrial fibrillation: diagnosis and treatment

925  GONZALEZ, L. M.
     The imperfect science of predicting intestinal viability intraoperatively

950  DISCUSSION

1000 LUNCH AND VISIT TO THE TRADE EXHIBITION

1100 BERTONE, A.
     Standing equine orthopaedic surgery

1125 LICHTENBERG, D.
     Arthroscopically assisted intralesional treatment of cysts in the medial femoral condyle

1145 TORRE, F.
     Equine arthroscopy: curative, preventive or cosmetic?

1205 RICHTER, W.
     Stem cell-based cartilage repair: from the bench to clinical application in human patients

1225 BERTONE, A.
     Allogenic chondrogenic-induced mesenchymal stem cells to treat joint disease

1245 DISCUSSION

1300 LUNCH AND VISIT TO THE TRADE EXHIBITION

1430 TORRE, F.
     A current perspective on the use of perioperative antibiotics

1450 WILLY, C.
     A pragmatic recommendation for modern wound antisepsis – update 2018

1510 MÜLLER, A. C.
     Control of antibiotic treatment of infected synovial structures through measurement of acute phase protein serum amyloid A

1530 FEIGE, K.
     Dysphagia in the horse

1550 DISCUSSION

1600 COFFEE BREAK AND VISIT TO THE TRADE EXHIBITION

1700 HALLOWELL, G. B.
     New insights in fluid treatment of gastro-intestinal disease

1720 GONZALEZ, L. M.
     Alterations in intestinal permeability and their influence on the postoperative course

1740 GERDES, C.
     Diagnosis and treatment of sacroiliac joint disease

1800 DISCUSSION

1815 END OF FIRST DAY

* Simultanübersetzung der englischen Vorträge ins Deutsche
ATRIAL FIBRILLATION: DIAGNOSIS AND TREATMENT

van Loon, G.

Atrial fibrillation (AF) is the most important arrhythmia leading to poor performance. It is predominantly found when the atrial size is large. Atrial dilatation may be present due to underlying heart disease such as valvular disease or heart failure. However, healthy adult horses can have large atria (typically warmbloods, racehorses etc.) which explains why AF is usually found without underlying heart disease, also called ‘lone AF’. In smaller breeds, such as ponies, AF rarely occurs and if it does, it is usually associated with structural disease.

Once the arrhythmia starts it usually very quickly becomes sustained and can only terminate following treatment. In rare cases, the arrhythmia is paroxysmal which means that spontaneous termination within the first 3-5 days may still occur.

Clinical signs of lone AF usually depend on the intensity of exercise. Horses at rest or used for low-level exercise usually show no clinical signs. Racehorses and event horses show a decrease in performance and often pull over suddenly. Show jumpers and dressage horses show less obvious clinical signs but often lose their ‘spark’, especially at higher levels of exercise. Horses with AF may show epistaxis during exercise. Some horses may show weakness or even collapse during exercise.

Upon auscultation, an irregularly irregular rhythm with pauses and too early beats is found. Often the intensity of the first heart sound is more pronounced. Definite diagnosis is made with an ECG recording that typically shows replacement of P waves by fibrillation (f) waves, irregular RR intervals with normal (supraventricular) QRS morphology (Fig. 1).

Figure legends

Figure 1: on an electrocardiogram, atrial fibrillation is characterized by replacement of P waves by fibrillation (f) waves, irregular RR intervals with normal (supraventricular) QRS morphology (Fig. 1).

At rest, horses with lone AF show an irregular rhythm but the heart rate is usually normal. During exercise, however, horses with AF typically show a disproportionately increased heart rate, with some horses showing heart rates of over 250 - 300 bpm. Such high rates may result in weakness and can even lead to collapse in some horses. About 60% of horses with AF show abnormal QRS complexes during exercise. More importantly, about 30% even show the ‘R-on-T phenomenon’, which means that individual QRS complexes are no longer identifiable but superimposed on T waves (Fig. 2).

Figure legends

Figure 2: during lunging exercise, this horse shows a high heart rate with an episode of R-on-T phenomenon (double arrow) during which the mean ventricular rate is 405 bpm.

R-on-T is known to be an arrhythmia that carries a risk as it may deteriorate into ventricular torsades de pointes or ventricular fibrillation which would result in collapse or even sudden death. Although this only occurs in a minority of horses with AF, it should be acknowledged clearly. Finally, at high rates, some horses show ventricular dyssynchrony on ultrasound, an abnormal ventricular activation pattern which may be very hard to diagnose but may carry a risk for weakness or collapse.

In horses with severe underlying disease and secondary AF, treatment should be symptomatic and aim to reduce heart rate, increase ventricular contractile function and improve overall cardiac function (e.g. digoxin, ACE-inhibitors), rather than to try and treat the arrhythmia itself, as AF is very likely to recur quickly.

Horses with lone AF that are permanently at rest should not be treated. Racehorses and competition horses, and horses showing high maximal heart rates (>220 bpm) during their regular exercise or horses that present abnormal QRS complexes or R-on-T phenomenon should be treated. For asymptomatic horses, performing at low levels and not presenting an abnormal ventricular response, owners should be well informed about the small potential risk for riding, treatment options and recurrence rates. In case no treatment is performed, horses affected by AF should only be ridden by an adult, informed rider.

Lone AF can be treated medically or by transvenous electrical cardioversion (TVEC).

Medical treatment of AF

The most commonly used drug to treat AF is quinidine sulphate but the drug has become difficult to obtain in many countries. Treatment should be done in a quiet environment under continuous (telemetric) ECG surveillance. Quinidine sulphate is usually administered dissolved in 3-4 litres of water at 22 mg/kg via nasogastric tube, every 2 hours with...
a maximum of 6 treatments a day. Occurrence of cardiac or non-cardiac adverse effects may require prolongation of treatment intervals or continued treatment at 6 hour intervals. Non-cardiac adverse effects include nasal oedema, depression, colic, diarrhoea and laminitis. Cardiac adverse effects include hypotension, QRS and QT prolongation, supraventricular and ventricular tachycardia (VT), torsades de pointes, collapse and death. QRS prolongation should not exceed 25% due to the risk of dangerous ventricular arrhythmia. In horses that develop tachycardia, digoxin may be administered as conjunctive treatment.

In Germany, quinidine sulphate is often administered intravenously as a 1% solution. In order to limit high ventricular rates, alpha-2 agonists may be administered but one should take into account that this may affect blood pressure in unstable horses.

Overall success rate of quinidine sulphate is about 60-80% with the best success rate in racehorses, rather than warmblood-type horses.

Intravenous amiodarone treatment is an alternative but generally less efficacious compared to QS. Flecainide (IV or orally) should not be used as it often induces dangerous ventricular arrhythmias and may result in sudden death.

Transvenous electrical cardioversion (TVEC)
Transvenous electrical cardioversion becomes more and more important because of its very high success rate (>95%), even in chronic AF cases and even in horses that cannot be converted by quinidine sulphate. In addition, it avoids adverse effects and risks associated with anti-arrhythmic drugs. The procedure, however, requires general anaesthesia, specialized equipment and expertise.

The procedure starts in the standing horse with insertion of 3 catheters in the jugular vein. One TVEC catheter is placed in the left pulmonary artery and a second in the right atrium. Finally, a pacing catheter is placed into the right ventricular apex. Subsequently, under general anaesthesia a 150 J electrical shock is delivered between the pulmonary artery and right atrial TVEC catheter (Fig. 3), while right ventricular pacing is available as safety backup pacing. After restoration of sinus rhythm, catheters are removed, and the horse is allowed to recover.

Aftercare
After restoration of sinus rhythm (by quinidine sulphate or TVEC), atrial electrical and contractile function needs time to restore. This takes a few days for acute AF but might take 4-6 weeks for chronic AF. During this period it is advisable to keep the horse at rest or only allow low level exercise. In patients with AF risk factors (large atria, a high number of premature atrial beats), oral sotalol treatment (2 to 3 mg/kg twice a day) is thought to be beneficial to reduce the risk of early recurrence of AF. After the resting period and after confirming the presence of sinus rhythm, horses are gradually brought back into normal training and are expected to return to their previous athletic ability. As recurrence within one year is encountered in about 35% of successfully treated cases of lone AF, follow-up of heart rhythm is indicated. ECG recording is ideal, but some owners perform palpation of the apex beat or auscultation to check the regularity of the rhythm. Monitoring heart rate variability parameters, such as RMSSD (root mean square of the successive differences), recorded at rest and walk, is also useful to identify recurrence of AF. The Equine Cardioteam at Ghent University has developed a smartphone app which allows owners to check heart rhythm using a heart rate monitor after successful treatment of AF in their horse.