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Atrial fibrillation (AF) is the most common atrial arrhythmia associated with poor performance in horses (Bonagura et al. 2010). The majority of horses with sustained AF have no evidence of significant structural heart disease, but ultrastructural and functional myocardial pathology, including AF-induced atrial remodelling, may still be present, predisposing to AF (Schwarzwalld et al. 2007a; De Clercq et al. 2008a). Early recognition and prompt treatment of AF are thought to be important to prevent irreversible AF-induced atrial remodelling. However, they may be considered in unresponsive cases or when not generally recommended for routine treatment of AF in horses.

Quinidine sulphate (with or without the addition of digoxin) has been used for the longest period of time and still represents the standard treatment for AF in horses, due to the fact that treatment can be complicated by a variety of severe adverse reactions (Reef 2003; Bonagura et al. 2010). An excellent prognosis for quinidine conversion (>95% conversion rate) may be given for horses with short-lasting AF (<4 months) without underlying structural heart disease (Reef et al. 1988, 1995). Recurrences affect approximately 25% of these cases. Acceleration of AV nodal conduction is common during quinidine treatment, resulting in rapid supraventricular tachycardia. Affected horses are usually treated with digoxin to slow the ventricular rate. However, digoxin has a delayed onset of action, a low toxic-to-therapeutic ratio and may fail to effectively control heart rate. Based on recent studies (Schwarzwalld et al. 2005, 2007a), diltiazem is likely to be safe and might be more effective than digoxin for ventricular rate control during quinidine treatment, provided that blood pressures can be closely monitored (Bonagura et al. 2010). Clinical experience with the use of diltiazem is limited and doses should be carefully titrated to effect.

Quinidine is becoming more difficult to obtain in some countries, which is one of the reasons why other treatment options ought to be investigated. Amiodarone, administered as a constant rate infusion, is potentially effective, but the long duration of treatment and high costs currently limit the use for routine treatment of AF (De Clercq et al. 2006, 2007). Flecainide has been proposed for the treatment of acute AF (Ohmura et al. 2000), but i.v. treatment is ineffective in cases with chronic AF and may result in potentially dangerous ventricular arrhythmias (van Loon et al. 2004; Birettini et al. 2007). Oral administration has demonstrated some success (Risberg and McGurrin 2006). Intravenous propafenone has recently been shown to be ineffective in horses with naturally occurring and pacing-induced AF, respectively (De Clercq et al. 2009). Like quinidine, all of these drugs can exert proarrhythmic effects, so the ECG must be carefully monitored from the first dose. Based on the current (limited) knowledge on their efficacy and safety, these agents are not generally recommended for routine treatment of AF in horses. However, they may be considered in unresponsive cases or when quinidine and TVEC are unavailable.

Transvenous electrical cardioversion (TVEC) of AF has been used at a number of referral centres as either the primary method of treatment or for management of horses that do not respond to quinidine therapy or develop severe adverse reactions to the drug. TVEC is very effective, especially for AF of recent onset, but it requires special equipment and trained personnel. The procedure involves percutaneous placement of 2 electrode catheters through the jugular vein into the left pulmonary artery and right atrium, respectively, followed by delivery of electrical shocks under general anaesthesia (McGurrin et al. 2005a, b, 2008; De Clercq et al. 2008b). A conversion rate of over 98% was reported in horses with ‘none AF’ (i.e. without underlying structural disease: McGurrin et al. 2008). Potential complications associated with TVEC are related to general anaesthesia or electrical shock, but their incidence appears to be quite low.

Both quinidine and TVEC are generally safe and effective treatments, but there has been no prospective study comparing the 2 methods in regards to efficacy and adverse effects. Horses with longer duration of AF, extensive atrial remodelling, or significant structural cardiac disease may be more difficult to convert to sinus rhythm using quinidine or TVEC and are more likely to have a higher recurrence rate independent of the treatment modality.

References


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