

Educational mission

Eight students from Nottingham University participated in the study gaining experience in cardiac auscultation, ECG recording and interpretation and in client communication. In addition, Kirsty Walker has used these data, together with similar results collected at a Polo Camp, as the basis of her final year dissertation and will also present the work at the Veterinary Cardiovascular Society in Loughborough, November 2017.

Cardiac murmurs

In total, 223 horses were recruited: 158 mares (71%); 65 geldings (29%); average age 13 years, range 4 – 24 years. Auscultation was performed in 218 horses.

Prevalence of Cardiac murmurs	No. of horses*	%
Aortic regurgitation (AR)	16	7
Mitral regurgitation (MR)	11	5
Tricuspid regurgitation (TR)	19	9
Systolic flow	48	22
Diastolic flow	3	1

* note some horses had more than one murmur

Age distribution in horses with and without murmurs

Age	All horses	AR	MR	TR	Systolic flow	Diastolic flow	No murmur
Average	13	18	15	12	12	5	13
Min	4	10	7	5	4	4	4
Max	24	23	21	22	21	6	24

AR and MR murmurs can be indicative of heart valve pathology and in some cases this can progress to impact on the horses' health. Fortunately progression is relatively rare and many horses exercise normally despite having these murmurs. Owners/riders of ponies with AR and louder MR murmurs were offered a detailed echocardiographic examination and individual reports will be sent to the owner/rider in all instances.

Subjective comparison of the age ranges for different murmur groups show that AR and MR murmurs were found in the older horses. This mirrors the pattern in the general horse population where horses with murmurs of left-sided valvular regurgitation (i.e. AR and/or MR) occur in 10% of the population and age increases risk of these murmurs reflecting degeneration of the heart valves in middle-aged and older horses.

TR and flow murmurs usually occur in horses with healthy heart valves. There is a higher prevalence of TR and flow murmurs than observed in the general horse population (TR = 1%; Flow murmur 10%). These types of murmur are very common in racehorses (TR approximately 40%, Flow murmurs approximately 60%) and while the prevalence is not as high in Polocrosse ponies as in racehorses, the fact that these ponies are fitter than most general riding horses perhaps explains why murmurs typically seen in athletes are prevalent.

Cardiac rate and rhythm

ECGs were collected in 199 ponies at rest, 126 ponies after chukkas and in 11 horses during chukkas. In addition in 7 horses, ECGs were recorded following training sessions. Detailed analysis of the ECGs is still underway. However, all ECGs have been screened and there were few clinically relevant abnormalities have been detected. Where the cardiac rhythm was irregular, owners/riders were informed and individual reports will be sent to the owner/rider in all instances. We included several control horses in our exercising ECG group and this showed that polocrosse ponies achieved peak heart rates of up to 200 bpm. By comparison, racehorses typically have heart rates of around 220 – 240 bpm. Speeds were monitored using a GPS device in a small number of individuals and this showed speeds of up to 24 mph, thus the heart rates and speeds appeared to be compatible. We found that there was a wide variation in the heart rate immediately after competition chukkas; some horses had excellent recovery while others did not. Heart rate recovery is influenced by fitness but can also be affected by over-heating and more consideration could be given to more active cooling of hot horses.

Conclusions

There was little evidence of cardiac rhythm abnormalities. Murmur prevalence was lower than the general horse population. Murmurs were more likely to be found in older horses. Some horses had high heart rates after exercise.