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Cardiac Auscultation

As vets in small animal practice, we make many decisions in the consulting room using the information we gather from clinical examination. Auscultation is an important skill and this article discusses normal and abnormal heart sounds using links to auscultation recordings from small animal patients.

Key words: Auscultation, cardiac, heart sounds, murmurs

Normal heart sounds

The normal heart sounds are caused by vibration of cardiac structures and also by movement of blood.

The first heart sound (S1) has a distinctive “lub” sound and is loudest over the area where the apex beat is palpable. S1 occurs at the start of ventricular contraction and is caused by vibrations associated with atrioventricular valve closure.

The second heart sound (S2) is often described as a “dub” and is loudest over the left cranial heart base. It is caused by the sudden reversal of flow at the time of aortic and pulmonic valve closure.

The third and fourth heart sounds (S3 and S4 respectively) are sounds associated with ventricular filling during diastole and are not usually audible in small animals. If S3/4 are audible in small animal patients then this usually suggests severe heart disease with impaired diastolic function.

Technique for cardiac auscultation

Auscultation is often performed after clinical examination and therefore some indication of cardiac function has generally been established from parameters such as pulse quality and mucous membrane colour.

Many clinicians will start with the diaphragm of the stethoscope placed over the apex beat on the left side of the thorax and then the stethoscope is gradually moved craniodorsally noting that the volume of S1 decreases and S2 increases. This is then repeated over the right hemi-thorax. The bell of the stethoscope can be placed over the sternum and this can be useful for detecting gallop sounds in cats.

This is a recording of **normal heart sounds** in a greyhound.

 **Play Audio 1**

 **All heart sounds in this article can be found at:**

vetcpd.co.uk/audio-heart

Best heard through earphones!

 **Video icons indicate video clips. Also at:**
vetcpd.co.uk/audio-heart



Describing heart murmurs

Abnormal heart sounds are known as murmurs. Murmurs are described according to their timing, loudness, point of maximal intensity (PMI) and also whether they are localised or radiate around the thorax.

1. Timing

Systolic murmurs occur between S1 and S2 and may be:

- ◆ Holosystolic – occurring between S1 and S2 resulting in a “lub-sh-dub” sound; or
- ◆ Pansystolic thereby obliterating S1 and S2 and making a “swoosh” sound.

This is a recording of a pansystolic murmur in a dog with mitral valve regurgitation.

 **Play Audio 2**

Diastolic murmurs are rare in small animals and occur between S2 and S1.

Continuous murmurs in young patients may be due to a left to right shunting patent ductus arteriosus and the murmur associated with this condition is classically heard throughout the cardiac cycle but the volume changes as in this recording.

 **Play Audio 3**

Gallop sounds are low frequency sounds heard between S2 and S1 which can sound like “lub-dub-doo” and, without an ECG, can be hard to distinguish from the sound made by a ventricular premature beat.