

Sinus Node Dysfunction/Sick Sinus Syndrome

What is sinus node dysfunction and sick sinus syndrome?

- The sinus node is our main pacemaker in our heart which controls the heart rate. It is influenced by our sympathetic (fight or flight) tone that makes the heart rate increase and parasympathetic (rest, relax, digest food) tone to slow the heart rate down.
- Sinus node dysfunction (SND) means that the sinus node does not always signal a heartbeat at the appropriate rate. This often results in short pauses in the heart rhythm where the heart is not beating.
- Sick sinus syndrome (SSS) is when the dysfunction becomes significant enough to cause symptoms and can include periods of sinus arrest (heart rate stops).
- SND and SSS can sometimes be accompanied by an intermittent inappropriate faster heart rate, termed bradycardia-tachycardia syndrome.

What causes SND and SSS?

- Sinus node dysfunction and sick sinus syndrome are most often secondary to fibrosis (scarring) of the sinus node or genetics, but other causes include infection, inflammation, or tumors.

What symptoms are associated with SSS?

- Clinical signs develop when the heart rhythm begins to affect the normal amount of blood supply to the body. Symptoms are variable. More mild symptoms include

being asymptomatic, lethargic, or weak. If the heart stops for 6-8 seconds or more, there is risk for fainting/collapse or rarely sudden death.

What breeds are predisposed?

- SND and SSS can happen to any dog or cat, but there are some breeds that are predisposed including the miniature schnauzer, West Highland white terrier, cocker spaniel, dachshund, Cairn terrier, pug, and Boxer. Middle aged to older dogs are most commonly affected. Female dogs are also overrepresented.

How is SND/SSS diagnosed?

- Veterinarians can be suspicious of SND/SSS based on history and by listening to the heart rhythm with a stethoscope, but a diagnosis can be suspected via electrocardiogram (ECG) and definitively diagnosed with a 24 hour ambulatory ECG, termed a Holter monitor.

Treatment

- The cardiologist will assess your pet's risk for symptoms from the arrhythmia to determine a treatment and monitoring plan. This can involve oral medications to increase the heart rate or to slow the faster periods of heart rate. A permanent pacemaker is sometimes necessary.



These are excerpts from a 24hr Holter monitor (ambulatory ECG) worn by a dog with SSS. Note the sinus pauses (solid stars) and periods of sinus arrest (outlined stars). In between these periods there are normal sinus heartbeats and short runs of tachycardia.