

Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC) – Updated May 2021

Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC) is a common disease of the boxer¹ and is also found in the English bulldog²⁻⁴, resulting in dangerous ventricular arrhythmias, and possibly leading to heart failure and sudden cardiac death^{1,4}. Histopathologically, this disease is characterized by myocyte replacement by adipocytes or by adipocytes and fibrosis (fatty or fibrofatty infiltration); commonly first noted within the right ventricle, then progressing to the interventricular septum, left ventricle and atria^{1,5-7}. Fibro-fatty infiltration and structural cardiac changes are rarely appreciated from transthoracic echocardiography. Furthermore, marked variability in day-to-day arrhythmia load is reported,⁸ suggesting that 24-hour Holter monitoring may have low sensitivity for diagnosis. Mutations in the striatin gene may be associated with some cases of ARVC in the boxer,^{9,10} however, a definitive mutation in a larger subset of affected dogs remains unknown.

DIAGNOSIS OF ARVC

Early clinical detection of ARVC is difficult, and many dogs suspected of having the disease have clinical signs of arrhythmias, such as lethargy, unexplained anxiety, or collapse. More rarely, the first clinical sign may be congestive heart failure, with fluid accumulation in the belly (right heart failure), or the lungs (left heart failure). Diagnosis of ARVC is made based on a combination of criteria, including breed (predominantly boxer or English bulldog), age (typically ARVC affects middle aged to older dogs), presence of ventricular arrhythmias (monomorphic ventricular tachycardia is one hallmark of ARVC), and appearance of the heart on echocardiography (normal in early stages of the disease, dilated in late stages of disease).

KEY POINTS

- In dogs with normal cardiac structure and function, medical management of arrhythmias is often successful, and prognosis is fair, with average survival around 2-3 years. Sudden death remains a risk.
- Dogs with a history of collapse are likely at a higher risk of sudden death. The frequency of sudden death is unknown because many dogs likely die suddenly before being diagnosed with disease. **In this cardiologist's experience, in dogs being medically managed for ARVC, sudden death occurs in about 10% of dogs.**
- Unfortunately, dogs with right or left sided heart failure have a poor prognosis.

TYPICAL TREATMENT OF ARVC

- Arrhythmias are medically managed with 1-2 anti-arrhythmic medications given every 8-12 hours daily. Side effects are uncommon, but the most common side effects are GI upset – loss of appetite, vomiting, diarrhea.
- 24-hour Holter monitors should be repeated every 6 months after medication regimens are stable.
- Repeat Holter is always indicated if collapsing occurs.
- Annual echocardiograms are indicated to monitor for worsening cardiac function.

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