

# Cardiology

Anne Arundel Veterinary Emergency

# 10 Signs of Heart Disease

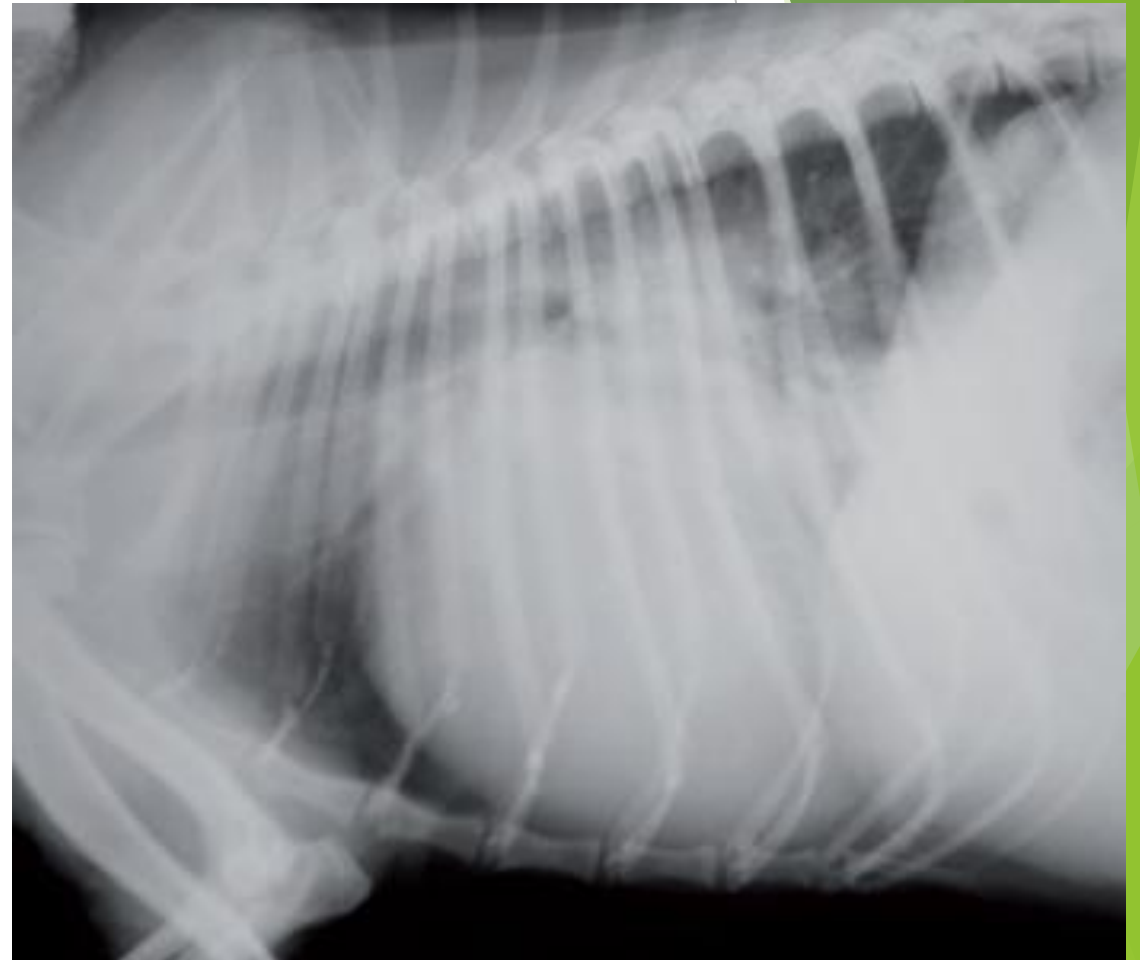
- ▶ Persistent Cough
- ▶ Difficulty Breathing
- ▶ Fainting / Collapsing
- ▶ Abdominal Swelling / Distention
- ▶ Exercise Intolerance
- ▶ Heart Murmur
- ▶ Change in Heart Rate
- ▶ Change in Body Weight
- ▶ Restless or Waking
- ▶ Loss of Appetite

# 6 Different Kinds of Heart Disease

- ▶ **Valvular Disease** : Abnormal heart valves leading to cardiomegaly
- ▶ **Myocardial Disease**: Heart muscles become weak or thick
- ▶ **Arrhythmias (Or Dysrhythmias)**: Condition that causes irregular heart beat
- ▶ **Pericardial Disease**: Protective sac around heart fills with fluid
- ▶ **Heartworm Disease**: Heartworm infestation damages heart, lungs and arteries
- ▶ **Congenital Disease**: Born with malformed heart that can lead to progressive heart enlargement

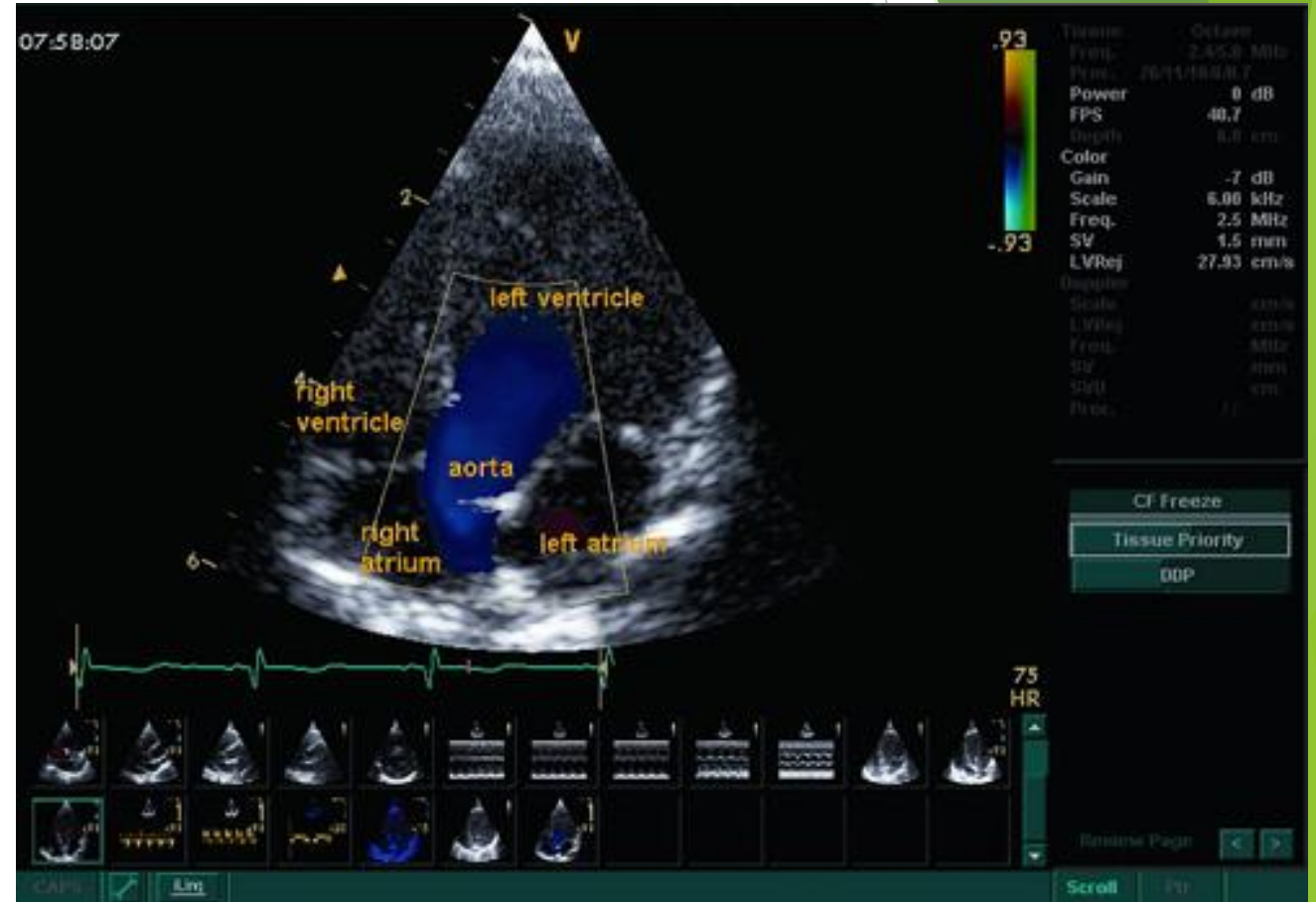
# Diagnostics: Radiography

- ▶ Overall Cardiac Shape / Size
- ▶ Evaluate Lungs
- ▶ Look for fluid build up in the lungs secondary to poor heart function



# Diagnostics: Echocardiography

- ▶ Cardiac Ultrasound
- ▶ Sound waves directed to the body while patient is R side lateral
- ▶ Shows heart muscles, valves, and great arteries
- ▶ Measures manner and speed of blood flow through heart
- ▶ Shaved & Alcohol/US Gel



# Diagnostics: Electrocardiography

- ▶ ECG or EKG
- ▶ Shows electrical activity of the heart
- ▶ Shows dysrhythmias
- ▶ Ultrasound Gel
- ▶ Run on Lead II
- ▶ Clips closer to elbow rather than armpits
- ▶ Right Lateral Ideally



# Canine Diseases & Conditions

- ▶ **Arrhythmogenic Right Ventricular Cardiomyopathy (AVRC)**  
Heart Muscle Disease - Normal heart tissue is replaced by fat or fibrous tissue. Adult onset inherited disease, primarily in Boxers. Fainting / Coughing
- ▶ **Congestive Heart Failure (CHF)**  
When the left side of the heart fails as a pump, the lungs begin to “flood” and when the right side of the heart fails, the abdominal and/or chest cavities “flood.”
- ▶ **Chronic Degenerative Valve Disease (MVR or TVR)**  
Abnormalities develop on the edges of the heart valves (Mitral or Tricuspid) creating regurgitation and abnormal blood flow leading to CHF.
- ▶ **Dilated Cardiomyopathy (DCM)**  
Loss of heart muscle strength (thin walls), enlargement of heart, and heart failure.

# Canine Diseases & Conditions

- ▶ **Patent Ductus Arteriosus (PDA)**  
Congenital Defect : Failure of large blood vessel to close just after birth
- ▶ **Pericardial Effusion**  
Abnormal accumulation of fluid within the sac surrounding the heart (pericardium)
- ▶ **Pulmonary Hypertension**  
High blood pressure within the vessels of the lungs
- ▶ **Pulmonic Stenosis (PS)**  
Congenital - Narrowing of the pulmonic valve resulting in increased workload on the right ventricle causing excessive heart muscle thickening (Hypertrophy)
- ▶ **Subaortic Stenosis (SAS)**  
Congenital - Abnormal tissue under the aortic valve that creates an obstruction the heart has to overcome



# Canine Diseases & Conditions

- ▶ **Systemic Hypertension (Aka High Blood Pressure)**  
>160 mmHg Systolic Blood Pressure
- ▶ **Tricuspid Valve Dysplasia**  
Uncommon congenital defect that is a malformation of the tricuspid valve that prevents it from completely closing

# Feline Diseases & Conditions

- ▶ **Hypertrophic Cardiomyopathy (HCM)**

Genetic Mutation - Progressive thickening (Hypertrophy) of the heart muscle (Left ventricle) and dilation of the left atrium.

- ▶ **Feline Arterial Thromboembolism (FATE)**

Blood clots form in the left atrium and the clot will travel out the aorta is become lodged cutting off blood flow to the rear legs.

- ▶ **Hyperthyroidism**

Increases the HR, thickens heart muscles, Increases BP, abnormal heart rhythm

- ▶ **Heart Murmurs, Systemic Hypertension, CHF, Pericardial Effusion**

# Cardiac Medications

- ▶ **Amlodipine (Norvasc)**  
Vasodilator - Treats High Blood Pressure
- ▶ **Atenolol (Tenormin)**  
Beta Blocker - Controls HR, Decreases arrhythmias, Treats Feline HCM and SAS
- ▶ **Clopidogrel (Plavix)**  
Decreases platelets to prevent blood clots
- ▶ **Digoxin**  
Glycoside - alters how certain cells pump in and out electrolytes (Na & K)  
Increases the amount of calcium within the heart which helps it contract stronger.
- ▶ **Diltiazem**  
Calcium Channel Blocker - Opposite of Digoxin. Blocks calcium in heart and relaxes the heart muscles.

# Cardiac Medications

- ▶ **Enalapril or Benazepril or Lisinopril**

ACE inhibitors - Prevent activation of certain substances that cause vasoconstriction, salt/water retention, and fibrosis (scarring) of the heart.

- ▶ **Hydrocodone (Tussigon)**

Opioid - Cough Suppressant in dogs

- ▶ **Furosemide (Lasix or Salix)**

Diuretic - Increases kidney production of urine which helps get rid of excess fluid in the body.

- ▶ **Mexiletine**

Antiarrhythmic - slows electrical impulses through the heart and makes the heart cells less sensitive to stimulation

- ▶ **Pimobendan (VetMedin)**

Inodilator - Vasodilator (Lowers BP) but Improves Muscle Strength. Together improving blood flow without the negative effect of damaging the heart muscle.

# Cardiac Medications

- ▶ **Sildenafil (Viagra)**

Delays the breakdown of the enzyme phosphodiesterase 5. It increases substances in the body that induce vasodilation specifically vessels in lungs

- ▶ **Sotalol**

Antiarrhythmic / Beta Blocker - Slows electrical impulses through the heart by blocking how potassium is able to leave the heart cell. Decreases heart's reaction to stress and lowers heart rate.

- ▶ **Spirolactone**

Diuretic - It blocks the effects of the hormone aldosterone, resulting in water loss by the kidneys, and may decrease scarring/ fibrosis within the heart muscle.

- ▶ **Theophylline**

Closely related to caffeine - relaxes muscles in the airway (Bronchodilator), increases the strength of the muscles involved with breathing, and improves how well mucus and debris is removed from the lungs.