CV Templates With Pictures!
Key!

- DISEASE – Name of lesion
- LESIONS that cause the disease
  - Description of lesion
- LESIONS you could see with…..– Suspicious of
  - Predisposing factors
  - Causes
- ROUTINE LAB DATA characteristic of ... Suspicious of..
  - Clinical signs
- TEST(s) TO RI RO DDx
  - Other tests to do
CV Anomalies
• DISEASE – PDA
• LESIONS that cause the disease
  • Anomaly – ductus arteriosus remains patent
• LESIONS you could see with…..– Suspicious of
  • Pup, poodle – breeds = lethargy, exercise intolerance, collapse,
  • Left heart dialation, cardiomegaly, hydrothorax and hepatomegaly. Aneurysm of aorta and pulm artery.
• ROUTINE LAB DATA characteristic of … Suspicious of..
  • not gaining wt properly etc or… NONE = puppy check
• TEST(s) TO RI RO DDx
  • None to mild inc. in liver enzymes; KEY is auscultation – machinery murmur.
• OTHER ANCILLARY TESTS?
  • Auscultation, radiographs, femoral pulse-fremitus, flow
• DISEASE – Pulmonic Stenosis
• LESIONS that cause the disease
  • Anomaly - Narrow pulmonary outflow tract. 3 locations – pre valvular, valvular, and postvalvular.
• LESIONS you could see with.....– Suspicious of
  • Common in beagles.
  • Rt ventricular hypertrophy – may progress to rt sided heart failure. Chronic passive congestion of liver – nutmeg liver, ascites
  • Modified transudate in the abdominal cavity.
• ROUTINE LAB DATA characteristic of ... Suspicious of..
  • Possibly prerenal azotemia?
  • Exercise intolerance.
• TEST(s) TO RI RO DDx
  • Auscultation?
DISEASE – Aortic Stenosis

LESIONS that cause the disease
- Anomaly – obstruction of outflow from left vent to aorta.

LESIONS you could see with…..– Suspicious of
- Golden, GSD, Newfies, Rotties, boxer.
- Left heart ventricular hypertrophy, aortic aneurysm + jet lesion, Pulm edema from left CHF
- Complications: Valvular endocarditis, Myocardial infarction

ROUTINE LAB DATA characteristic of ... Suspicious of..
- not gaining wt properly etc or... NONE = puppy check

TEST(s) TO RI RO DDx
- auscultation
Valvular endocarditis
Myocardial Infarction – pale areas
Myocardial Infarct
Aortic Aneurysm
DISEASE – IVSD

LESIONS that cause the disease
- Anomaly– Congenital hole in IV septum L \( \rightarrow \) R shunt
- Most commonly located subaortic

LESIONS you could see with…..– Suspicious of
- Dogs – Eng bull dog, keeshound – inherited
- Hereford – microphthalmia concurrently
- TBs, Arabs (possibly familiar)
- Left and rt vent hypertrophy, jet lesions, endocardium thickened and roughened due to turbulence.

ROUTINE LAB DATA characteristic of ... Suspicious of..
- lethargy? Death?

TEST(s) TO RI RO DDx
- Auscultation - MURMUR
• DISEASE – IASD – Patent foramen ovale

• LESIONS that cause the disease
  • Anomaly– Congenital hole in IA septum  L → R shunt

• LESIONS you could see with.....– Suspicious of
  • Common in pigs and cats.
  • Rt atrial and vent hypertrophy and dialation

• ROUTINE LAB DATA characteristic of ... Suspicious of..
  • decreased exercise tolerance.
  • Small defect may be subclinical.

• TEST(s) TO RI RO DDx
  • Auscultation - murmur
• DISEASE – Tetrology of Fallot

• LESIONS that cause the disease
  • Anomaly – collection of 4 lesions.
    • IVSD, PS, Over-riding Aorta, Right vent hypertrophy.
    • May also have PDA – pentology – helps survival
    • Eisenmengers complex – tetrology without PS – less cyanosis

• LESIONS you could see with…..– Suspicious of
  • Keeshonds, Arabs, Cattle – 2nd most common!

• ROUTINE LAB DATA characteristic of … Suspicious of..
  • cyanosis, dyspnea

• TEST(s) TO RI RO DDx
  • Auscultation, CBC – polycythemia from hypoxia.
DISEASE – Transposition of Great Vessels

- LESIONS that cause the disease
  - Anomaly – Aorta and Pulm arteries arise from opposite atria.

- LESIONS you could see with.....– Suspicious of
  - Very rare

- ROUTINE LAB DATA characteristic of ... Suspicious of..
  - Lethal

- TEST(s) TO RI RO DDx
  - Necropsy? ^_^
• **DISEASE** – Vascular Ring Anomalies - PRAA

• **LESIONS** that cause the disease
  - Anomaly – aorta arises from the right aortic arch instead of the left. It is on the other side of the esophagus.

• **LESIONS** you could see with.....– Suspicious of
  - Esophagus is surrounded by vascular tissue:
    - Dorsal: Ligamentum arteriosum
    - Left: Pulmonary artery
    - Right: Aorta
    - Ventral: Heart base
  - Results in esophageal stricture and megaesophagus.
  - GSD and Irish setters – increased risk

• **ROUTINE LAB DATA** characteristic of ... Suspicious of..
  - Regurgitation after eating solid food. Dec weight gain.

• **TEST(s) TO RI RO DDx**
  - Contrast radiography of thorax/ esopagus
DISEASE – Portacaval Shunt

LESIONS that cause the disease
- Anomaly – portal vein circulation bypasses the liver.

LESIONS you could see with.....– Suspicious of
- Large breeds – intrahepatic shunts are more common
  - PDV – patent ductus venosus.
- Small breeds – extrahepatic shunts more common
  - Portopostcaval shunts.

ROUTINE LAB DATA characteristic of ... Suspicious of..
- Serum concentration of UA is decreased.
- Increased serum ammonia - ammonium biurate crystals! ^_^
  - Hepaticencephalopathy – CNS signs
- Decreased weight gain

TEST(s) TO RI RO DDx
- Aquired - Liver enzymes and bilirubin are increased, jaundice!
- Congenital – Liver enzymes and bilirubin are normal
- Ultrasound – look at liver morphology.
- Contrast radiography of liver vasculature.
Shunt – no contrast in liver.
Ammonium biurate crystals

Haha... this was the pic they used for the UA quiz 😊
- **DISEASE** – Endocardial Fibroelastosis
- ** LESIONS** that cause the disease
  - Anomaly
- ** LESIONS** you could see with..... – Suspicious of
  - Burmese cat.
    - Also see in dogs, pigs, cattle and turkeys.
      - Often seen in round heart disease of turkeys.
  - Thick white glistening endocardium, especially left ventricle due to increased fibrous and elastic tissue that started as edema.
  - Left ventricle hypertrophy
- ** ROUTINE LAB DATA** characteristic of ... Suspicious of.. ?
• DISEASE – Valvular Dysplasias

• LESIONS that cause the disease
  • Anomaly – Abnormal valves
    • Missing
    • Part missing
    • Thick and defective

• LESIONS you could see with.....– Suspicious of
  • Common in Pigs.
  • 2\textsuperscript{nd} in Cats
  • Also seen in dogs and horses

• ROUTINE LAB DATA characteristic of ... Suspicious of..
Summary

Dogs
1. PDA
2. AS - subvalvular
3. PS
4. PRAA
5. IVSD

Cats
1. AVSD
2. AV Valvular Displasias
3. PDA and AS
4. Fibroelastosis

Cattle and horses
1. IVSD
2. Tetrology of Fallot
3. PDA
Pericardium and Epicardium
• DISEASE – Serous atrophy of epicardial fat
• LESIONS that cause the disease
  • Absence of fat in coronary groove (and other areas)
• LESIONS you could see with.....– Suspicious of
  • Gelatinous, grayish, shiny, glistens, translucent.
  • Malnutrition:
    • Poor nutrition
    • Lack of enough food
    • parasites
• ROUTINE LAB DATA characteristic of ... Suspicious of..
  • Low BCS?
  • Not seen with cancer!
• TEST(s) TO RI RO DDx
• DISEASE – Epicardial Hemorrhage
• LESIONS that cause the disease
  • Petechiae, ecchymoses on epicardial and endocardial surfaces; only significant if extends into myocardium
• LESIONS you could see with….. – Suspicious of
  • Causes:
    • Blood vessel problem: infection (black leg), vasculitis (RMSF, MCF), uremia
      • Pigs also have this lesion in Mulberry Heart disease and gut edema disease (e. coli) – cause degeneration and necrosis of small blood vessels.
• ROUTINE LAB DATA characteristic of … Suspicious of..
  • Not usually a clotting factor defect.
  • Platelet or vessel problem
• TEST(s) TO RI RO DDx
  • Test for viral/bacterial causes. Clotting times?
*General ddx for petechiae*

- **(1) Thrombocytopenia:** DIC, ITP, tick
- **(2) Vasculitis:** Blackleg (*C. chauvoei*), RMSF/MCF, uremia, mycotic, Mulberry Heart dz, Edema dz
DISEASE – Hydropericardium

LESIONS that cause the disease
- Fluid in pericardial sac

LESIONS you could see with.....– Suspicious of
- CHF – modified transudate

ROUTINE LAB DATA characteristic of ... Suspicious of..
- Muffled heart sounds or radiographs

TEST(s) TO RI RO DDx
- Aspiration and examination of fluid
  - Transudate – clear, low sg, low protien
  - Modified Transudate – rid tinged, higher sg, more protien
  - Exudate – sg > 1.018, Protien > 2.5 and inc neutrophils.
  - Hemorrhage - hydropericardium
• DISEASE – Hemopericardium – cardiac tamponade.
• LESIONS that cause the disease
  • Blood in Pericardial Sac
• LESIONS you could see with.....– Suspicious of
  • Can see current jelly and chicken clot fat inside pericardium post mortem.
• Causes:
  • Horses – idiopathic aortic rupture – post racing or breeding
  • Dogs – idiopathic rt. Atrium tear
  • Cat – cardiomyopathy, trauma
  • Copper Deficiency – pigs and turkeys – dec structural integrity
    • Lathyris – grass pea/sweet pea toxicity.
  • Trauma
  • Uremia – very rare!
  • Hemangiosarcoma
• ROUTINE LAB DATA characteristic of ... Suspicious of..
  • Muffled heart sounds and/or radiographs
• TEST(s) TO RI RO DDx
  • Pericardial tap – examine fluid
Hemangiosarcoma
- DISEASE – Inflammation – Pericarditis and Epicarditis
- LESIONS that cause the disease
  - Excessive amount of fibrin on pericardium and epicardium along with pericardial fluid that is classified as exudate.
    - Hematogenous or Direct penetration
- LESIONS you could see with.....– Suspicious of
  - Birds/turkeys – hematogenous spread – ornithosis, psiticosis, chlamydiosis...
    - Yellow gray cloudy fluid with floating clots and fibrin
    - Fibrinous inflammation in other body cavities.
  - Cattle – TRP – trauma! Metal through reticulum into pericardium.
    - Yellow gray fluid with clots – chronic yet active – fibropurulent pericarditis.
  - Sheep – Fibrinous Plueritis – pasturella hemolytica
  - Pigs – Hemophilus suis – Glasser’s Dz – polyserositis
    - Or Mulberry Heart dz, or Edema dz (e. coli)
- ROUTINE LAB DATA characteristic of ... Suspicious of..
  - Mild to severe CHF, anorexia, muffled heart sounds, jugular pulse, edema. Exaggerated signs in late preg. cows.
- TEST(s) TO RI RO DDx
  - Sternum thrust – cow grunts in pain
Edema Disease – shiny!
• DISEASE – Pyothorax

• LESIONS that cause the disease
  • Excessive amount of fibrin in thorax – with sulfur granules
    • “sulfur” granules = mats of organisms

• LESIONS you could see with….. – Suspicious of
  • Cat – bite wound – ruptured lung abscess.
    • actinomyces and nocardia
  • Cattle – Shipping fever – Pasturellosis
  • Equine – shipping fever / ruptured lung abscess
    • Strep.

• ROUTINE LAB DATA characteristic of … Suspicious of..
  • Muffled heart sounds? Rads?

• TEST(s) TO RI RO DDx
  • Tap fluid?
General ddx for fluids in body cavities

- Ddx for ANY FLUID: NEOPLASIA!!!
- Transudate = ↓colloid oncotic pressure (hypoalb)
  - Kidney (amyloidosis, glomerulonephritis)
  - Liver (hypoalbuminemia)
  - GI (PLE = lymphangiectasia, lymphoma, etc)
- Modified transudate = ↑hydrostatic pressure
  - CHF; erythrophagocytosis, hemosiderin
  - Also includes chyle, blood, urine
- Exudate = vasculitis
  - Infectious (septicemia, TRP, Glasser’s, FIP)
  - Toxic: Clostridial, etc.
- Chyle (white) = ↑lymphatic pressure
  - Lymphangitis
  - Ruptured thoracic duct
- Blood (hemorrhage), including MPs with hemosiderin
  - Neoplasia (HSA)
  - Copper deficiency
  - Trauma (HBC) or idiopathic rupture
4 reasons for ANYTHING to be BIG

- (1) Cells: inflammation, neoplasia, hyperplasia
- (2) Fluid: transudate, modified transudate, exudates, hemorrhage, chyle
- (3) Tissue: fibrous, amyloid, bone, fat, glycogen
- (4) Gas
Ddx for heart failure in cows

- (1) TRP
- (2) LSA
- (3) Endocarditis
- (4) Cardiomyopathy (rare)
Endocardium!
• DISEASE – Hematocysts
• LESIONS that cause the disease
  • Blood filled cysts on valves
• LESIONS you could see with.....– Suspicious of
  • NGS in calves.
• DISEASE – Serocysts
• LESIONS that cause the disease
  • As blood is removed from the hematocysts they became filled with clear – yellow fluid
• LESIONS you could see with…..– Suspicious of
  • Never a clinical problem.
- **DISEASE** – **Endocardiosis**
- ** LESIONS that cause the disease**
  - Glistening, thick AV valves.
  - SHINY! – no inflammation
- ** LESIONS you could see with.....– Suspicious of**
  - Dogs only! - most common cause of CHF in old dogs
  - Valves incompetent and leaky.
  - Pathogenesis unknown – increases with age.
- **ROUTINE LAB DATA characteristic of ... Suspicious of..**
  - some degree of heart failure and decreased cardiac output.
- **TEST(s) TO RI RO DDx**
DISEASE – Endocarditis

LESIONS that cause the disease
- Can be valvular (90%) or mural (10%) looks Dull!!!
  - Yellow to red, crumbly, dry, dull growths
- Valvular – inflammation on valves – fibrin, necrosis, bacteria.
  - Tendancy to form emboli. - emboli can cause thromboembolic colic or pulm embolism...
    - Dog left AV most common – Cattle right AV most common.
- Mural – inflammation of endocardium – less common
  - Cats – atrial thrombosis as part of cardiomyopathy syndrome.
  - Cattle - Black leg – clostridium chauvoei – trivial – usually die of black leg first.

LESIONS you could see with…..– Suspicious of
- Pathogenesis
  - endothelial injury - S. vulgaris, d. immitis, cath, aortic stenosis – jet stream
  - Bacteria – need source to enter blood stream
  - Platelets and Fibrin adhere to the endothelium, then the bacteria adheres to the platelet-fibrin matrix.

Ddx for valvular endocarditis:
- Cattle: C. pyogenes, Clostridium, Strep, Staph
- Horse: Strep, S. vulgaris (subaortic, cranial mesenteric)
- Pigs: Erysipelothrix (tail dock, castration, tooth ext)
- Sheep: Strep
- Cat: cardiomyopathy
- Dog: Bartonella, Strep, Staph, Enterobacter
- Young all spp: strep, anomalies
Thromboembolic Colic
DISEASE – Mineralization

LESIONS that cause the disease
- pale white foci in myocardium, disseminated white streaks
  - Could be any of the other ddxs for “white”
  - They will feel gritty.

LESIONS you could see with.....– Suspicious of

Causes:
- WMD – VitE and Sel responsive disease – muscle degen and necrosis that becomes mineralized. – active muscles are most likley to have lesions.
- Uremia  - inc ca and phos, vasculitis
- Inc. Vit D. – toxins
- Hypercalcemia – neoplasia, renal failure, blastomycosis...ect.
- Brain-Heart Syndrome – primary lesion in brain – after AGD Sx
- Johne’s Disease – idiopathic – cows NOT hypercalcemic.

TEST(s) TO RI RO DDx
- not diagnosed antemortem – only during necropsy.
General ddx for MINERALIZATION

1. **White muscle dz** (#1 YOUNG RUMINANT) = dystrophic, VitE/Se responsive in larynx, heart
2. **Uremia** (#1 OLD DOG/CAT) = renal failure causes increased CaxPO₄, uremic vasculitis, necrosis
3. **Hypervitaminosis D** = *Solanum, Cestrum diurnum*, iatrogenic, rodenticide
4. **Hypercalcemia** = CaxPO₄ > 90: LSA (malignancy), ↑PTH, ↑VitD, renal failure, blastomycosis
5. **Brain-Heart Syndrome**: ↑CNS → sympathetic overload → mm degen → myocardial min
6. **Johne’s dz** = aortic mineralization
General ddx for WHITENESS

- (1) **Cells**: inflammation, neoplasia (esp lymphoma)
- (2) **Tissue**: scar (fibrin), fat, mineralization, fibroelastosis, amyloid, jet lesion
- (3) **Necrosis**: loss of cells, toxin, infarct
Nutmeg Liver and hepatomegaly
Myocardium
DISEASE – Cardiomyopathy with NO Cardiomegaly

LESIONS that cause the disease
- Degeneration of cardiac muscle cells – pale white foci on myocardium. Cardiomegaly is absent!

LESIONS you could see with…..– Suspicious of
- Causes – pale white foci on myocardium
  - (1) TOXINS: Monensin (ruminant coccidiostat, toxic to horses); adriamycin, selenium, flouroacetate...
  - (2) MINERALIZATION – see prior slides
  - (3) NUTRITIONAL: WMD, Mulberry heart, hypercalcemia, brain-heart – followed by mineralization
    - Pigs- Mulberry Heart dz- Vit E/Sel def. – has petechia, echymosis, hemorrhages and fibrinous pericarditis – most cardiomyopathies do not have those lesions. - looks very similar to edema dz- e.coli
  - (4) VIRAL: coronavirus (rabbit), parvo (dog) – sometimes CDV
  - (5) BACTERIAL: see endocarditis
  - (6) ISCHEMIA: emboli (anomalies or endocarditis), atherosclerosis (hypothyroid), GDV (infarcts/conduction probs)
- **DISEASE** – Hypertrophic Cardiomyopathy

- **LESIONS** that cause the disease
  - Cardiomegaly WITHOUT pale white foci – thick walled ventricle and IV septum.

- **LESIONS** you could see with….. – Suspicious of
  - Cats – 1° Hyperthyroidism and 2° cardiomyopathy. Treating the thyroid problem will help the heart. Do not (ever?) develop saddle thrombi
    - Similar to thyrotoxic heart disease – but in that case heart is 1° and treating the thyroid will not help. Must distinguish!
  - Very rarely seen in dogs – must search for cause

- **ROUTINE LAB DATA** characteristic of … Suspicious of..
  - Weight loss, polyphagia, hyperactive, EKG abnormalities – 10% develop CHF.

- **TEST(s) TO RI RO DDx**
  - T4 test - Cats with Hyperthyroidism have markedly increased TT4 and fT4
• DISEASE – Dilatory Cardiomyopathy

• LESIONS that cause the disease
  • Cardiomegaly WITHOUT pale white foci – thin walled ventricle and IV septum - dilatory

• LESIONS you could see with…..– Suspicious of
  • Cats – Idiopathic or taurine def. – neither are common in the US anymore. – saddle thrombi can result. Male persians
  • Turkeys – round heart disease, Chickens – Ascites syndrome
  • Dogs - <5 years – prognosis is poor. Breeds: Giant, Doby, Boxers (may have pale foci) , cockers, Males are more likley.
      • Pulmonary edema also present

• ROUTINE LAB DATA characteristic of ... Suspicious of..
  • Ascites, orthopnea, exercise intolerance, weak, mitral murmur, edema, ascites, cardiac arrhythmia...

• TEST(s) TO RI RO DDx
Ascites Syndrome

- Hydropericardium and ascites.

- could be because of back pressure (liver) - or CHF - JG cells in the kidney sense dec cardiac output, save Na - increases blood pressure! saves kidney at expense of the body.
Aortic Saddle Thrombus
• DISEASE – Hypertrophy

• LESIONS that cause the disease
  • Compensatory response because of insufficient cardiac output.
    • Requires: Time, healthy myocardium, adequate nutrition

• LESIONS you could see with.....– Suspicious of
  • Two general causes – both increase the pumping work.
    • Decreased cardiac output due to leaky valve
    • Inc resistance to outflow demands (stenosis)

• Rt vent hypertrophy vs. Left vent hypertrophy.
  • Next slide 😊
Causes of Hypertrophy

- **Ddx for LV hypertrophy in dogs (rare!)**
  - Aortic stenosis
  - Left AV endocardiosis

- **Ddx for LV hypertrophy in CATS:**
  - Idiopathic HCM
  - Hyperthyroidism

- **Ddx for RV hypertrophy:**
  - Pulmonic stenosis
  - Right AV endocardiosis
  - Patent foramen ovale
  - Cor pulmonale (rare, i’ lung dz)
  - High altitude (cattle) – polychythemia also

- **Ddx for bilateral ventricular hypertrophy:**
  - IVSD (horses and cows), PDA (dog)
  - Round heart dz
DISEASE – Congestive heart failure

LESIONS that cause the disease

- Circulatory requirements at rest cannot be met. Congestion in the vascular beds behind the side of the heart that fails.

LESIONS you could see with…..– Suspicious of

- **LEFT**: aortic stenosis, PDA, LAV insufficiency, endocarditis, cardiomyopathy, myocarditis, neoplasia
- **RIGHT**: pulmonic stenosis, PDA, RAV insufficiency, endocarditis (cow), cardiomyopathy, myocarditis, heartworms, pericarditis, cor pulmonale, neoplasia

ROUTINE LAB DATA characteristic of ... Suspicious of..

- **Left**: PulmEd (mild to **pleural fibrosis**), hemosiderosis, heart failure cells, dyspnea/orthopnea, ex intolerance, RAAS
  - Hydrothorax and pulmonary edema
- **Right**: CPC-L, cardiac edema to kidneys, jugular pulse, hepato/splenomegaly, ex intolerance , nutmeg liver
  - Kidney – Inc. Na reabsorbtion because of low output to JG cells. – increases blood volume and compounds the problem.
Hepatomegaly and cardiomegaly
Nutmeg liver!
DISEASE – **Myocarditis**

**Lesions** that cause the disease

- Inflammation of myocardium – uncommon in animals.

**Lesions** you could see with..... – Suspicious of

- Bacterial emboli from left sided endocarditis break off and enter coronary artery – bacteria then infects the heart muscle and you get supportive inflammation. Microscopic - purulent
  - Bacteremia: any, *Clostridium*, Listeria, RMSF
  - Viral: parvo, K9 distemper (rare), FMD, BT
  - Parasitic: *Trypanosoma* (Chagas), *Toxoplasma* (think immune-def!!), Leishmania (rare), Prototheca (rare), *Sarcocystis* (cow/sheep, duck?)
  - Plant: granulomatous Vetch (Midwest)

**Routine lab data** characteristic of ... Suspicious of..

- Boxers: idiopathic (with cardiomyopathy)
- Cow/sheep: **eosinophilic myocarditis** d/t *Sarcocystis* = gray-green → condemn.
- Ducks: *Sarcocystis*?
Neoplasia
• **DISEASE** – **Lymphoma**

• **LESIONS that cause the disease**
  - Most common tumor in heart – often right side.
  - Pale white foci/streaks on myocardium – same ddx...

• **LESIONS you could see with…..– Suspicious of**
  - Bovine, canine – most frequently affected.
  - Feline – ant mediastinum – FeLV
  - Bovine – BLv – right side of heart and causes CHF
    - Uterus, abomasum, lymphnodes, and retrobulbar also commonly affected.
Retrobulbar lymphoma! O.O
Rhabodomyoma – can be confused with lymphoma
• DISEASE – Hemangiosarcoma
• LESIONS that cause the disease
  • Common – usually found in right auricle/atrium.
• LESIONS you could see with..... – Suspicious of
  • 3 characteristic areas:
    • Sleen
    • Rt. Atrium – may cause cardiac tamponade
    • SQ
  • GSD predisposed to splenic HSA 😞
• ROUTINE LAB DATA characteristic of ... Suspicious of..
  • Metastatic!
• TEST(s) TO RI RO DDx
  • Anemia, acanthocytes, schistocytes, nRBCs, polychromasia...
DISEASE – Heart Base Tumor - paraganglioma

LESIONS that cause the disease
  • On or around the base of the heart – around large vessels.
  • Arise from chemoreceptors.

LESIONS you could see with..... – Suspicious of
  • Brachiocephalics – like Boston Terriers – predisposed.

ROUTINE LAB DATA characteristic of ... Suspicious of..
  • Causes swelling of head and neck!
Swelling of head and neck!
• DISEASE – Mesothelioma
• LESIONS that cause the disease
  • Mesothelial cells line body cavities.
• LESIONS you could see with.....– Suspicious of
  • Occasionally become neoplastic
  • Picture on previous slide ddx:
    • Ectopic thyroid tumor
    • mesothelioma
• DISEASE – Thymoma

• LESIONS that cause the disease
  • Cranial to heart, in areas of thymus.

• LESIONS you could see with.....– Suspicious of
  • Goats commonly?
  • In dogs it can be associated with myasthenia gravis.
Arteries
DISEASE – Arteriosclerosis

LESIONS that cause the disease
- Occurs in large elastic vessels.

LESIONS you could see with.....– Suspicious of
- Smooth muscle cells proliferate and precede the lipid deposition. - progress into fibrosis
- Mineral – chicken with mareks disease.

ROUTINE LAB DATA characteristic of ... Suspicious of..
- Diseases associated: diabetes mellitus, hypothyroidism

Theories for pathogenesis:
- Injury
- Monoclonal cell population proliferation
- Clonal population? Senescent cells dec??
• DISEASE – Arteritis

• LESIONS that cause the disease
  • Endarteritis – inflammation of tunica intima (inner coat)
  • Immune mediated: Arthus type reaction, Type III hyper

• LESIONS you could see with..... – Suspicious of
  • General ddx arteritis*
    • (1) Immune-mediated (TIIIH)
    • (2) Verminous
    • (3) Viral
    • (4) Bacterial
    • (5) Toxic (uremia, mercury)
Causes of Arteritis

Horse: (1) *S. vulgaris* (aortic, cranial mesenteric)
- (2) Equine herpesvirus I = equine viral abortion (EVA): abortion, resp dz, myelitis/encephalitis (CNS hemorrhage); ddx *S. neurona*
- (3) Equine viral arteritis (EVA) = rare

Dog: (1) Heartworm → RV, RA, pulmonary arteritis, pulmonary thrombi/infarct; **CAVAL SYNDROME** (rare) = IV hemolysis d/t HUGE #s of heartworms in RA/CauVC; can get aberrant migration (mesentery, aorta, brain)
- (2) K9 adenovirus (infectious K9 hepatitis) → Blue Eye
- (3) RMSF (*Rhipicephalus*) → widespread vasculitis = CNS, cardiac, skin, pulmonary
- (4) *S. lupi* → aorta, esophageal sarcomas

Cat: FIP, FIV

Pig: E. Coli edema dz

Calves: *Haemophilus* = thromboembolic meningoencephalitis (TME) = CNS signs; ddx lead/polio

Cows: MCF, BVD
Hemorrhage as a result of vasculitis - RMSF
Thrombosis Ddx

Ddx for aortic-iliac thrombosis
- (1) Equine: S. vulgaris
- (2) Cat: CM
- (3) Dog: glomerular amyloidosis (\(\downarrow\)ATIII, hypercoag)
- (4) Any: Endocarditis, sepsis

Ddx for pulmonary artery thrombosis
- (1) Heartworm (#1 dog)
- (2) HCM (#1 cat)
- (2) RAV endocarditis
- (3) Renal amyloidosis (#2 dog/cat)
- (4) Cushings (hypercoaguable)
Veins
• DISEASE – Phlebitis
• LESIONS that cause the disease
  • Emboli or thrombi – most common cause
  • Telangiectasis – see post mortem – group of dilated vessels – usually incidental finding.
DISEASE – Postcaval Thrombosis

LESIONS that cause the disease
- Toxic rumenitis/acidosis → 2’ infection → hepatic abscess → pulmonary embolus.

LESIONS you could see with.....– Suspicious of
- Pulmonary embolus can erode through vessels → exsanguination
Lymphatics
• **DISEASE** – *Chylothorax*

• **LESIONS** that cause the disease
  • Chyle in pericardial sac

• **LESIONS** you could see with.....– Suspicious of
  • Ruptured thoracic duct. – trauma?
  • Neoplastic obstruction of thoracic duct.

• **ROUTINE LAB DATA** characteristic of ... Suspicious of..
  • Muffled heart sounds and/or radiographs

• **TEST(s) TO RI RO DDx**
  • Aspiration and examination of fluid
  • **Chylothorax vs. lymphoma**: chyle = many normal lymphocytes; lymphoma = immature LARGE cells
Chyle

- White or tomato soup colored fluid; cloudy
- Histo: mostly lymphocytes, can have neuts and MPs (older), can’t distinguish from pseudochylothorax
- Early: lymphocyte rich
- Late: neutrophil rich (don’t r/o chylothorax just b/c it’s neurophil-rich, fluid may be OLD!)

**ALWAYS** do cytology for lymphoma → can cause chylothorax by eroding through wall of thoracic duct

- Chylothorax if Triglyc > Cholestrol in fluid.
- If the Triglc concentration in the fluid is markedly increased (>300) that is diagnostic.

- **Pseudochylothorax** – inflammatory effusion with no sepsis or chyle.