DISCLAIMER:
As before, we copied/pasted these pictures from Dr. Meuten’s slides. Please don’t distribute to anyone other than classmates. If corrections need to be made, please let me know.
Describe the structures present.
• Bovine placenta with caruncles
• Lesions? Amnion looks dark...
Describe. What is the appropriate term for each pic? How does each develop?
• Mummy on L & macerated fetus on R
• Mummification: resorption of fluid from conceptus in a STERIL uterus with a closed cervix -> mummified fetus (wrinkled skin over a mass of bones)
• Maceration Degenration & disintegration of fetus, usually in presence of open cervix (fetus not expelled). Rapid BACTERIAL decomposition -> emphysema & maceration
What are the significant noninfectious lesions and which are NGS?
**NGS**
- Amniotic plaques
- Mineralization
- Hippomane
- Avillous areas (equine)
- “Cervical star”
- Endometrial cups
- Torsion umbilicus
- Avascular tips-chorion

**Significant**
- Hydramnios
- Hydrallantois
- Amorphous globosus
- Placental insufficiency
- Adenomatous dysplasia (equine allantois)
- Torsion umbilicus
- PLACENTITIS – “dull”
Describe how to determine time fetal death.
Antepartum: No signs of vitality; uninflated lungs (will not float in water); pieces of squamous epithelium in lungs (from “inhaled” amniotic contents); absence of thrombosis of umbilical arteries; no milk in stomach. Often autolyzed when expelled.

Partum death: Heart functional (SQ edema of head & neck – or whatever got extruded); aerated lungs (if head got out to take breath); Often associated with dystocia, or lethal developmental abnormalities.

Neonatal death: thrombosis of umbilical arteries; Aerated lungs (will float in water); microscopic exam shows inflated alveoli; milk in stomach; soil in hooves; rubbed off eponychium.
• Amniotic plaques = normal
• Don’t sample.
• Remember, shiny = OK; crumbly/crusty/caseous = not good
Describe. Significance?
• Hippomane that contains Ca & PO4 lamina
• Normal
Describe. Dx?
• Cervical star. Occurs in location where placenta contacts and is compressed by cervix -> placental epithelium does not form because cervix lacks crypts to connect with placenta

• ‘Lesion’ is NGS
Describe. Ddx?
• Endometrium with endometrial cups around pregnant horn.
• Normal
Describe.

Significance?
• Twisting of umbilical vessels: Slight twisting commonly occurs in Eq & is not a problem.
• You must see acute ischemic necrosis (below) to relate it to cause of abortion (more severe torsion)
Piglet: Describe lesions. What is the etiology?
• Strangulation by umbilical cord (uncommon)
Bovine placenta: describe. Dx?
• Normal to hyperplastic caruncles with adventitial placentation: Occurs when the number of caruncles is reduced, as a compensatory mechanism to maintain nutrition
Describe lesions. Dx?
• Glistening raised pale yellow to white raised coalescing lesions

• Adenomatous hyperplasia, dysplasia of allantois: overgrowth of endometrium (pre-cancerous)
Describe lesions. Ddx?
• Dull roughed pale tan to yellow slightly raised lesions
• Inflammation and/or necrosis
Diagnosis?
• Schistosomes reflexus
Describe lesions. Dx? Etiology?
• Arthrogryposis and Spina bifida
• Etiology= Lupinus
How do these relate to gestation and what abnormalities do they cause?
• Top L: Lupinus -> arthrogryposis in calves
• Top R: Veratrum californicum -> cyclopia in lambs
• Bottom: KY-31 fescue contains ergot fungus as symbiotic agent -> abortion or prolonged gestation of mares
List the top 3 causes of equine noninfectious abortion
• #1 = twinning
• Dystocia
• Insufficient progesterone
• Congenital defects
• Placental separation
• Body preg
• Cord abnormality (torsion, stangulation)
• Fescue toxicosis
List the top causes of equine infectious abortion
Equine abortion

- Viral
  - Equine rhinopneumonitis
  - Equine viral arteritis

- Bacterial
  - Cervix not competent so ascending infection

- Fungal
  - Ascending

#1 CAUSE = TWINS
How do twins normally present?
• One large & one small, or one may be mummified
• Both are often stillborn or aborted
Bovine: Describe lesions. Dx? Etiology?
• Cerebellar hypoplasia
• Etiology = BVD
Bovine: Describe lesions. Dx? Etiology? Etiologic Ddx?
- **Dx**= Hydranencephaly
- **Etiology** = BVD
- **Ddx**= Bunyaviridae: Aino, Akbane, Cache Valley
List the leading infectious causes of bovine abortion.
- **Viral:** BVD; IBR
- **Bacterial:** Brucella abortus (NC is free); Leptospira hardjo (L. pomona); Campylobacter fetus ss venerealis; Listeria monocytogenes
- **Protozoal:** Neospora caninum, Sarcocystis
- **Mycotic**
- **Epizootic Bovine Abortion – A spirochete**
- **Must culture!! Special requirements for Lepto & Brucella**
- **Diagnostic rate for abortion is only 30-50%**
- **Infectious causes account for ~50%**
Bovine Placenta: Describe lesions. Ddx? Sampling region?
• Pale tan to yellow caseous (crumbly) round to oval lesions
• Placentitis d/t Brucella
• Ddx = Brucella, mycotic,
• Sample the yellow, NOT red
Bovine placenta: Describe lesions. Dx? Etiology?
• Thick ‘leathery’ placenta with multifocal yellow lesions of inflammation & necrosis
• Placentitis d/t Brucella
• Ddx=mycotic
Bovine fetus lungs: Describe lesions. Ddx?
• Marked fibrinous pleuritis
• Ddx = bacterial
• Dx=Brucella
Describe lesions. Dx?
• Thick raised proliferative circular plaque dermatitis
• Ddx = mycotic infection
Liver: Describe lesions. Ddx per species?
• Milliary white foci scattered through liver
• Herpes is #1Ddx: EHV-1 (Eq); CHV (Dog); Feline viral rhinotracheitis; pseudorabies (Pig); CHV (Goat); IBR (Ox)
• Bacterial:
Adrenal: Describe lesions. Ddx?
• Marked adrenal cortical hemorrhage & necrosis

• Ddx: Herpes (IBR – Ox; Pseudorabies – Pig; CHV – Dog; etc.), bacteria
Sheep abortion: Describe lesions. Ddx?
• Numerous small white foci of necrosis
• Dx= Toxoplasmosis.
• Ddx = bacterial, protozoal (Sarcocystis, Neospora - Bovine), viral? (dunno b/c they’re more raised than typical of virus)
Small ruminant fetus. Describe lesions. Ddx?
• Fibrinous exudate indicating bacterial -> Campylobacter

**Ovine and Caprine abortion**

- **Viral**
  - Border disease – hairy shakers!

- **Bacterial including rickettsial**
  - *Brucella ovis/melitensis*
  - Enzootic abortion (*Chlamydia psittaci* – now *Chlamydophila abortus*)
  - Q-fever (*Coxiella burnetii*)
  - *Campylobacter fetus ss fetus, jejuni* OR *Flexispira rappini*

- **Protozoal** – *Toxoplasma gondii*/Neospora caninum
Lamb fetus: Describe lesions. Ddx?
• Multifocal white lesions of hepatic necrosis
• ‘Target lesions’ on liver are basically pathognomonic for Campylobacter
Sheep: Describe lesions. Ddx?
• Multifocal raised tan regions of inflammation and necrosis
• Dx = Salmonella. Septic fetus/dead fetus & dead ewe
Ddx? How many fetuses are necessary to carry to term?
• Mummifications & aborted fetus
• Viral Ddx: Porcine parvovirus; PRRS (hemorrhage in umbilicus often found); Porcine enterovirus; Herpes (pseudorabies – will show white lesions in lung); Encephalomyocarditis virus (carried by rodents)
• Bacterial Ddx: Leptospira interrogans serovar canicola, pomona, bratslava, tarassovi
• 2 fetuses are necessary to maintain CL
Eq aborted foal: Describe lesions. Ddx?
• Interstitial pneumonia: swollen (but not inflated), red lung with rib impressions
• Fibrin cast in trachea basically pathognomonic for EHV-1 (Rhinopneumonitis)
Lung of aborted foal: Describe lesions. Dx? Dx for pig?
• Multiple white foci of necrosis (will contain herpetic viral inclusions)
• Dx = EHV-1 (Equine Rhinopneumonitis)
• Dx for pig= Pseudorabies

**EHV - 1 is a respiratory pathogen**

4 syndromes in horses

1) upper respiratory espec in young
2) **abortions** in bands of mares
3) highly fatal in neonatal foals < 1 wk old
   viremia & 2⁰ bacteria
4) encephalomyelitis in adults - hemorrhage cord
   poor performance in racing
Equine fetal liver: Describe lesions. Ddx?
• Multifocal white regions with miliary pattern.
• Suppurative hepatitis with coagulation necrosis
• Viral: EHV-1
• Bacterial: Salmonella, Actinobacillus, Tyzzer’s Dz (Clostridium piliformes)
Eq neonate: Describe. Dx? Significance?
• Frothy d/c is a normal terminal change.
• Will not occur in premature foals b/c they lack surfactant (develops late in gestation)

Right: Top trachea is from a premature foal. Bottom is from a neonate carried for full term with surfactant present, producing frothy fluid lining trachea post mortem
Canine fetus: Describe lesions. Ddx?
• Multifocal small white lesions on liver & ecchymoses on kidney (turkey egg kidneys below with viral inclusions)
• Dx= Canine Herpes Virus
• Ddx = bacterial septicemia
List causes of feline abortion.
Feline abortion

- **Viral**
  - Feline rhinotracheitis virus
  - Panleukopenia virus
  - Feline leukemia virus

- **Bacterial**
  - Incidence unknown