Marek’s disease (MDV)
Extended Version

Classic case: Down, paralyzed chicken, one leg forward

Presentation:
History and signalment
- Primarily chickens
- Young flocks 2-5 months old, sexually immature
- UNVACCINATED birds (backyard breeders, large commercial hatcheries)

Clinical signs:
Most commonly a lymphoproliferative syndrome.
- Mononuclear infiltrates develop in peripheral nerves and organs.
- Clinical signs depend on the location of lesions
  ▪ Depression followed by death
  ▪ Transient paralysis (one leg forward, one leg backward) recovery after several days
  ▪ Distorted iris shape or color
  ▪ Enlarged feather follicles

Various forms of Marek’s disease
- **Neurologic**: paralysis, drooping wings, extended legs, torticollis
- **Ocular**: Blindness, distorted iris shape, discolored iris
- **Cutaneous**: enlarged feather follicles, leg lesions
- **Visceral**: Nodular (white “fish flesh”) ± diffuse visceral lymphoid tumors
- **Subclinical**: Decreased growth rate and egg production

DDX:
Lymphoid leukosis, reticuloendotheliosis, lymphoproliferative disease, other neoplasms, avian encephalomyelitis, Genetic grey eye, Newcastle disease, riboflavin deficiency, tuberculosis
Marek’s disease (MDV)

Test(s) of choice:
- **NECROPSY** for gross lesions
  - **Enlarged peripheral nerves**
  - Loss of nerve striations
    - Vagus
    - Brachial plexus
    - Lumbosacral plexus
  - **Lymphoid tumors** – diffuse or nodular
    - Lung, heart, liver
    - Spleen, kidney, muscle
    - Gonads, proventriculus, intestines
    - Skin leukosis
      - **Enlarged feather follicles**
      - Cause for **condemnation**
    - **Ocular lesions** due to lymphocytic infiltration of iris
      - Loss of iris function
      - Distorted pupil shape
      - Iris discoloration
  - Bursa of Fabricius atrophy
  - Enlarged mottled liver & spleen

Histopathology & immunohistochemistry
- Lymphocytic infiltration of organs, predominantly T-cells

PCR: Marek’s viral DNA within lymphomas

Rx of choice:
- **NO effective treatment**

Prognosis: Varies
- Losses can be **HIGH** in effected flock
- Laying Flock: 5-10% mortality
- Broilers, Roasters: < 20% mortality (earlier slaughter at 14 wks)
- **Economically important** - birds may be condemned at slaughter
Prevention:

- **Vaccination**
  - > 90% efficacy
  - Proper vaccine handling, thawing, and reconstitution critical
  - Administered at hatching
  - In ovo vaccine – common in commercial broiler chickens
    - Administer 18th day of incubation by automated technology

- Strict biosecurity
- Strict sanitation protocols
- Breed for genetic resistance
- Purchase from PATHOGEN-FREE flocks
- Backyard breeders:
  - Vaccinate day old chicks
  - Purchase ONLY vaccinated or pathogen-free chicks

Pearls:

- Marek’s disease virus: oncogenic lymphotrophic *Alphaherpesvirus*
- HIGHLY contagious, ubiquitous in environment
- Vertical transmission does NOT occur
- Incubation period is 4-12 weeks
- Virus produced in B lymphocytes & feather follicle epithelium
- Infected chicken carriers (latent infection, T-cells)
  - Virus shed for a long time
    - Dander, feathers, desquamated skin
    - Secretions, droppings
  - Virus persists in litter & dust for MONTHS
  - Shedding REDUCED by prior vaccination
- Infected chickens MAY develop permanent immunsuppression
- Infected lymphoid cells MAY progress to lymphoma
- Three serotypes of MDV
  - Oncogenicity associated with serotype 1 MDV
  - Many strains of serotype 1 MDV, vary widely in pathogenicity