Presentation:

Common Health Conditions in Poultry

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Brief Biography:
Dr. Crespo joined the faculty at Washington State University in July 2009. Previously she worked at UC Davis where she was part of the California Animal Health and Food Safety Laboratory System. She received her veterinary training at the Universidad Complutense, Madrid, Spain, with honors in animal production and economy, and spent two years in large animal practice. Then she moved to Canada, where she specialized in avian and poultry and attained a MS and DVSc at the University of Guelph, Canada.
Common Clinical Conditions of Poultry
Dr. Rocio Crespo
AHFSL-WADDL

Outline
- Anatomy and physiology
- Handling and physical examination
- Common medical ailments
- Zoonotic diseases

The Outside of the Chicken

The inside of the chicken

All for flight:
- Lightweight, rigid airframe
- Hollow bones
- High metabolic rate
- Feathers
- External embryonic development
- Highly efficient respiratory oxygen exchange system
Handling and physical examination

<table>
<thead>
<tr>
<th>Character</th>
<th>Layer</th>
<th>Non-layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comb &amp; wattles</td>
<td>Large, bright red, glossy</td>
<td>Small dull, shriveled</td>
</tr>
<tr>
<td>Head</td>
<td>Neat, refined</td>
<td>Beely, weak</td>
</tr>
<tr>
<td>Eye</td>
<td>Bright, prominent</td>
<td>Dull, sunken</td>
</tr>
<tr>
<td>Eye ring</td>
<td>Bleached</td>
<td>Yellow tinted</td>
</tr>
<tr>
<td>Beak</td>
<td>Bleached</td>
<td>Yellow</td>
</tr>
<tr>
<td>Abdomen</td>
<td>Deep, soft, pliable</td>
<td>Shallow, tough, light</td>
</tr>
<tr>
<td>Pubic bones</td>
<td>Flexible, wide apart</td>
<td>Stiff, close together</td>
</tr>
<tr>
<td>Vent</td>
<td>Large, moist, bleached</td>
<td>Small, dry, puckered, yellow</td>
</tr>
</tbody>
</table>

Early signs of illness

• Slight change eating habits
• Dull feathers and color changes in feathers
• Stained feathers around nares, vent, shoulders, or eyes
• Swelling, redness or feather loss around eyes
• Crusty material in the nostrils
• Favoring or lameness in limb

Signs of serious illness

• Fluffed and huddled posture
• Decreased appetite or thirst
• Abnormal, labored or noisy respiration
• Weight loss
• Discharge from eyes, nostrils or mouth
• Injury or swelling on body
• Bleeding
• Major change in personality or behavior

Prevention / Biosecurity

• A difficult subject for small farm
• Do not take visitors in the bird house
• Show from a distance
• Careful with SALMONELLA and other bacteria, mainly with small children
• Hand washing
• Different shoes
• Don’t drag manure into HOUSE

Common medical ailments
Feather loss

- Inadequate nutrition
- Feather pecking or pulling
- Molting
- Disease and stress
  - Parasites
  - Viruses
  - Bacteria
- Mating

Molting

Head > Neck > Breast > Body > Wings > Tail

Feather pecking

Cannibalism

- Cloacal
- Other body parts
- Eggs

Controlling Feather Pecking and Cannibalism

- Encourage use of perches, nests, and outdoor range
- Provide litter/long straw indoors
- Feed mash diet vs pellets
- Beak trim when young
- Avoid cannibalistic strains
- Prevent learning of this behavior from others
  - Remove injured birds

External parasites

- Scaly leg: Knemidokoptes sp.
Mites and lice: treatment and prevention

- Directly on bird:
  - Dusts and wettable powders (individual birds), e.g., Servin or carbaryl, pyrethrins
  - Liquid spray (multiple birds and litter, bedding and structures)
  - Oil-based products
  - Ivermectin
- Resin strips
- Prevention: Dusting box

Trauma

- Predation injury
  - Varies with varmint
    - Hemorrhage
    - Missing birds
    - Feather piles
- Cannibalism

Fowl Pox
Avian Respiration

- The trachea has solid rings
- Lungs are rigid, fixed and non-expandable
- Lungs continually bathed in fresh, O₂ rich air via a 4-stroke respiratory pattern
- No diaphragm

Air into the trachea → posterior air sacs → lungs → anterior air sacs → out

Respiratory conditions

- Management
  - Dust, ammonia, heat
  - Vaccine reaction
- Infectious
  - Virus: NDV, AI, infectious bronchitis (IB), infectious laryngotracheitis (ILT), wet pox
  - Bacteria: Mycoplasmosis (mainly MG), colisepticemia, coryza (chicken vs turkey), pasteurellosis
  - Fungal: Aspergillosis
  - Parasite: syngamus trachea, air sac mites
- Nutritional and toxic (direct or indirect)

Viral tracheitis

- Infectious bronchitis (IB)
- Newcastle disease
- Avian influenza

Exotic Newcastle

- High mortality
- Depression
**Avian Influenza**

- Mouth breathing
- Almond shaped (squinted) eye
- Matted eyes (wing)
- Conjunctivitis

**ILT**

- Almond shaped (squinted) eye
- Matted eyes (wing)
- Conjunctivitis

**Vaccination**

- Marek’s (1 day old)
- Infectious laryngotracheitis
  - TCO: eye drop
  - Vector vaccine: injectable
- Pox
- Others if needed (?)

**Water vaccination**

- Clean water
  - No sanitizer in water
  - Skimmed milk to neutralize chlorine
- Withhold water
  - 2-8 hours > 4 weeks of age
  - 30 min < 4 weeks of age
  - Lights turn down/off
- Vaccination coincide with feeding
- Complete vaccination 1-2 hours
Aspergillosis

Fowl Cholera (Pasteurellosis)

Septicemia
- Colibacillosis
- Mycoplasmosis (chronic respiratory disease)
- Other bacteria
  - Primary
  - Secondary

Colibacillosis

Digestive System
- Copious salivary secretions
- Crop for food storage
- Proventriculus ≈ stomach
- Great digestive efficiency
- Paired cecal pouches (helps break down cellulose)
  - Cecal dropping ~ 1 in 10 voids

Enteric conditions
- Feed quality / type
- Infectious
  - Virus
  - Bacteria
  - Parasites
  - Fungi
- Toxic
Mycotoxicosis
- T2 mycotoxin (Fusarium)
  - Erosions in mouth
- Aflatoxin
  - Liver damage

Crop mycosis
- Candida (yeast)
- Abuse of antibiotics
- Treatment: copper sulfate

Trichomoniasis
- Parasite
- Common in pigeons
  - Canker

Pullorum-Typhoid
- Caused by *Salmonella pullorum*
  - Disease of baby chicks
    - 7-10 days of age
- Symptoms:
  - White diarrhea
  - Pasted vent
  - Difficulty breathing
  - Huddle together
  - Blindness
- Nearly all chicks with P-T die
  - Chicks that survive, become adult “carriers”

Pullorum-Typhoid History
- 1930’s… ~70 years ago, Pullorum Disease killed a lot of poultry
  - Prevented farmers from raising poultry
- Poultry farmers developed a plan to eliminate Pullorum Disease in the U.S.
  - National Poultry Improvement Plan (NPIP)
- Created a test for carriers
  - ~20 years later the disease was eliminated in commercial flocks
- Today still exists but only isolated cases
Clostridial enteritis

Coccidiosis

“Worms”
- Round worms
  - Capillaria
  - Ascaridia
- Tape worms

Fatty Liver (Hemorrhagic) Syndrome

Histomoniasis

Renal system
- Portal system
- Medicines injected IM into the hind limb may be cleared from the body through the renal portal system.
- Pectoral muscle injection is preferred for this reason
Gout
- Acute urate deposition
- Chronic urate deposition

Avian Heart
- 4 chambers
- Muscle “flap”

Reproductive System: Female

Reproduction
- Clutch laying ensures all chicks hatch at the same time
- Sperm host glands
- Incubation starts when the hen begins “setting”
- Broodiness has been selected against in certain breeds

Anatomy of an Egg
Blood / Meat spots in eggs

- Hemorrhage during ovulation = blood spot
- Ovarian follicle tear = meat spot
- Candling of eggs

Soft & misshapen eggs

- Nutritional
- Infectious

Neoplasia (LL, Marek’s, etc)

- Neoplasia
  - Carcinomatosis
- Tuberculosis
- Septicemia
  - Salpingitis
  - *E. coli* (Hjarre’s disease)

Nervous System and Special Senses

Source: [http://www.uoguelph.ca/zoology/devobio/210labs/ecto3.html](http://www.uoguelph.ca/zoology/devobio/210labs/ecto3.html)
Vitamin E deficiency

Riboflavin (B2) deficiency

Botulism

• Middle ear infection
• Crooked (wry) neck
• Encephalitis (?)

Skeleton

• Number of cervical vertebrae vary with function. (Swans – 25, Parrots – 9, Chickens – 14.)
• Weight reduction through:
  – Loss of teeth
  – Pneumatized bones
  – Fusion of digits in hands
  – Lightweight skull
• Vertebral fusion
Bird Bones
- Hollow with diverticula
- Femoral medullary bone laid down as pullet
- Allows for flux of calcium for egg production
- Can become depleted

Leg deformities
- Valgus
- Varus
- Rotated tibia
- Tibial dyschondroplasia

Synovitis / Osteomyelitis

Zoonotic concerns

Avian Influenza
- The AI Virus
  - 16 different H’s (hemagglutinin); H1 – H16
  - 9 different N’s (neuraminidase); N1 – N9
  - Up to 144 combinations possible (e.g., Asian H5N1)
  - AI subtypes of concern – H5 or H7

Avian Influenza
Overview of Avian Influenza

- **Low Path AI (LPAI)**
  - Common in wild waterfowl
  - Mild and low / no death rate
  - Many subtypes
  - Multiples only in gut
  - H5 and H7 are a concern, can mutate to High Path in domestic birds

- **High Path AI (HPAI)**
  - Acute, systemic disease with high death rates
  - H5 or H7 subtypes
  - Multiples throughout the body
  - H5/H7 has not been found in domestic birds in Washington

Salmonellosis

- *Salmonella enterica* or Paratyphoid
  - SE (*S. enterica* subsp. *enterica* var *enteritidis*)
  - Rarely causes disease in older chickens
  - Positive ~ 12%
    - Meat > egg
Egg Contamination by Salmonella

Campylobacteriosis
- Most common cause of diarrhea in humans in USA
  - Associated with eating raw or undercooked poultry meat or cross-contamination
- Chickens do not show clinical signs
  - Spreads in flock through water and feces
- 47% breast meat contaminated
  - Intestinal content contamination of meat

Chlamydiosis
- Reportable disease
- Uncommon in commercial poultry (turkeys, ducks, pigeons)
- Feral pigeons ~60%
- Clinical signs:
  - Nasal/eye discharge
  - Green or runny droppings
  - Depression/death

Erysipelas
- Birds
  - Acute septicemia
- Humans
  - Erysipeloid
  - Clinical signs
    - Cutaneous (localized or diffuse)
    - Systemic ⇒ Endocarditis
Dust allergies

- Respiratory disease in humans
- Mixed particles: feed, bedding, feathers, droppings, mites, and microorganisms
- Use protection:
  - Laying down bedding
  - During cleaning
  - Catching/moving poultry

The End