“Avian Paediatrics!”

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General

- Most companion birds (e.g. psittacids and passerines) are altricial i.e. when hatched they are blind, deaf, and not feathered, and therefore totally dependent on their parents or rearer.
- As juveniles, their health status is determined by:
  - Pre-laying factors
    - parental health
    - parental nutrition
    - parental maturity
    - parental genetics
  - Incubation factors
    - artificial vs. natural incubation
    - temperature, humidity and hygiene in the nest box or incubator
    - Care in handling of the eggs by either the parents or the incubator operator
    - Frequency and degree of rotation during artificial incubation
  - Post-hatch factors
    - If the chick is been hand reared, the following parameters in the rearing environment play important roles in the health of the chick:
      - temperature
      - hygiene
      - humidity
      - nutrition
      - management
- Detailed knowledge of hand rearing practices, including weaning ages, etc can be obtained from reputable aviculture literature.

Examination of the chick

- History
  - Parents – genetics, diet, health status
  - Siblings (if any) – any problems or deaths within the group
  - Incubation – artificial or natural? Hatchability of fertile eggs is a key indicator of incubation performance.
  - Hatching – if artificially incubated, were there any problems with hatch?
  - nursery management – hygiene, biosecurity, source of eggs and/or chicks
  - Diet – type of food, how prepared, volume and frequency of feeding
  - Records – hatch weights, growth rates, mortalities, medications, previous medical problems
- Physical examination
  - Weight – weigh the chick and compare it to the expected weight range found in growth charts (if available)
  - Posture
    - Be aware that chicks sleep and rest in what seem to be ‘awkward’ positions. These positions change as the chick moves – look for postures that do not change with movement.
  - Conformation
    - Look at the positioning and conformation of the limbs and the spine
  - body condition
    - Examine the toes and elbows. In a well-nourished, healthy chick they should be ‘plump’ Thin toes and elbows are a good indicator in neonatal chicks of dehydration, malnourishment or disease
• Palpate the pectoral muscles – the keel should be well fleshed with soft pectoral muscles

○ Behaviour
  • Young chicks (pre-weaning) should be either sleeping or calling for food. Restlessness could indicate incorrect environmental temperature or stress e.g. excessive lighting
  • Older chicks spend a lot of time sleeping, but are more interested in their environment and in socialising with nursery mates
  • A feeding response (vigorous extension and bobbing of the head and neck) should be easily elicited by pressing gently at the commissures of the beak. Failure to elicit a response can be an indication of disease, hypothermia or weakness.

○ Skin
  • Prior to full feathering the normal chick’s skin should be pink or pink-yellow in colouration, and soft to the touch
  • Pallor of the skin can indicate hypothermia, anaemia or illness
  • Erythematous skin can indicate hyperthermia or illness
  • Heavily wrinkled skin indicates dehydration

○ Crop
  • The normal crop should have some food in it at most times. It should not be over-distended, nor should it have significant amounts of air or gas in it.
  • Rhythmic contractions of the crop should be visible in neonatal chicks
  • The crop should empty in 4-6 hours in all chicks

○ Head
  • The size of the head should not be excessively large, in relation to body size
  • Beak – the beak should have a normal conformation (see Disorders affecting the beak)
  • There should be no sinus swellings
  • The eyes should be symmetrical and healthy in appearance. They begin to open at 10-28 days, and take several days to open completely once they begin to open.
  • Most Australian and African parrots hatch with their ears open. Eclectus and South American species should be open within 2-3 weeks post-hatch.
  • The nares should be open and symmetrical

○ Oral cavity
  • Examine the oral cavity for diphtheritic plaques or other abnormalities

○ Abdomen
  • In neonatal chicks the abdomen should be large, relative to the rest of the body. The liver may be visible through the skin in very young chicks, and rhythmic contractions of the ventriculus should be visible. The duodenal loop may be visible. There should not be bruising or haemorrhage visible. The abdomen can be trans-illuminated with an intense focal light for closer inspection
  • As the chick grows, the abdomen reduces in size relative to the rest of the body. It should be concave when palpated – a convex abdomen could indicate a degree of abdominal distension

○ Feather growth
  • Depending on the species, some chicks are hatched naked, or with wispy down feathers. Others are covered in fluffy down feathers. A second wave of down feather growth begins at 1-3 weeks of age, and sometimes even later in some species.
  • Pin feathers begin to emerge at 2-3 weeks of age. The body contour feathers emerge over the shoulders first; the pattern of emergence after that varies between species, although usually the body contour feathers emerge at the same time or shortly before the secondary flight feathers on the wings. Primaries may begin to develop before secondary feathers, but usually mature after them. Final feather maturity is usually not complete before the bird has weaned.
  • Abnormalities include:
    • Feathers erupting in an unusual pattern e.g. in a circular pattern on the crown of the head, rather than running parallel along the line of the body
• Stress bars in the opened vane
• Abnormal colouring
• Haemorrhage in the calamus
• Dystrophic development

  o Droppings
    • The faecal portion should be relatively well-formed and not malodorous
    • A degree of polyuria is normal, but this should lessen as the chick ages. Excessive or persistent polyuria warrants further investigation

• Diagnostic testing
  o Microbiology is an important tool in assessing gastrointestinal flora. Gram stains and cultures are frequently used to assess crop or other gastrointestinal problems. Normal bacterial flora includes Lactobacillus, Streptococcus, Staphylococcus and Bacillus spp. Low numbers of E coli are often normally cultured as well. Other Gram negative bacilli and Candida are rarely cultured from healthy chicks.
  o Clinical pathology can be used readily on chicks. It is important to note that, compared to adults of the same species, chicks normally have
    • A lower PCV and a higher white cell count
    • Total protein and uric acid are usually lower
    • CK is usually higher.
  o Radiology is an essential tool for assessing the status of the skeletal system.

Common problems

**Stunting**

  • Aetiology
    • Stunting is seen in the first 30 days of life. It is usually associated with:
      • improper feeding
      • poor environmental conditions
      • disease
  • Clinical signs
    • Subnormal weight gains
    • Reduced muscle mass - check toes, wings, backs
    • Abnormal feathering e.g. head feathers develop in a circular pattern on the crown
    • Over-sized head, relative to the size of the body
    • Eyelids fail to open normally or when expected
    • Delayed ear opening or narrowing of the ear canal
    • Chronic, recurrent infections
    • Constantly calling and begging for food
    • As the chick gets older it often develops a globose head with an elongated slender beak. The eyes may appear exophthalmic because of the misshapen skull
  • Treatment
    • Identify and treat predisposing cause
    • Correct nutritional inadequacies
  • Prognosis
    • The prognosis is good if the problem is diagnosed early and treated aggressively.
Crop stasis (‘sour crop’)

- **Aetiology**
  - generalised ileus
    - generalised infection
    - foreign bodies
    - chilling
    - heavy metal toxicosis
    - dehydration
  - crop disorders
    - foreign bodies
    - overstretched/atonic crop
    - infectious ingluvitis
    - fibrous food impaction
    - crop burns
  - dietary problems
  - cold food
    - excessively watery food
    - food that settles out in the crop
    - overfeeding
    - overly dry food
- **Clinical signs**
  - Crop failing to empty in more than 6 hours
  - Regurgitation
  - Loss of feeding response
  - Signs of dehydration
    - Erythematous, wrinkled skin
    - Tenting of the skin
    - Sunken eyes
- **Treatment**
  - Identify and correct cause
    - Crop and faecal cytology (Gram’s stain) and culture
    - Haematology and biochemistry
    - Radiology
  - Empty the crop with a feeding tube and lavage with warm saline. (In some extreme cases, it may be necessary to perform an ingluviotomy.)
  - Always assume these chicks are dehydrated. Correct this dehydration with parental fluids until crop motility has been restored.
  - Give appropriate antimicrobials as indicated by crop and faecal cytology/culture
  - Use a crop ‘bra’ if needed. This is a non-adhesive bandage placed under the crop and around the wings to ‘lift and support’ the atonic crop to allow gravity to assist with crop emptying.
  - Once the crop has been emptied, in many cases it may be advisable to leave it empty for a few hours while dehydration is corrected. Initial feeds should be of small volumes of isotonic saline. If this moves through, solids can be added. Feed small, watery meals often. Pre-digesting the hand-rearing formula with a small amount of pancreatic enzymes can liquefy the diet without diluting it.
  - Motility modifiers e.g. metoclopramide or cisapride may assist in restoring motility, although their efficacy is poor if used without other supportive measures.
- **Prognosis**
  - Good, provided prompt and appropriate therapy is provided
**Thermal injuries to the crop**

- **General**
  - Less common now than in past years, as aviculturists have become aware of the problem. Novice hand-reamers, however, still present chicks with this problem.

- **Aetiology**
  - The most common aetiology is a hand rearing formula that has been overheated in a microwave oven and then fed before it has cooled sufficiently. ‘Hot Spots’ – small foci of super-heated food – may be present in a mix, and be overlooked when (if) the food temperature is checked.
  - Some cases may be due to chicks coming into contact with incandescent light bulbs or heating pads, particularly while the crop is distended after a recent feed.

- **Clinical signs**
  - In the early stages (1-2 days) affected chicks may be lethargic and refuse feeding. Physical examination may reveal mild to moderate crop stasis and erythema of the most prominent part of the ventral crop.
  - After the initial stage of erythema, blanching of the affected tissue develops. A crust then forms over the area; when it lifts off a fistula is usually revealed, often with food leaking from it.

- **Diagnosis**
  - Must be differentiated from a crop perforation (see below)

- **Treatment**
  - Surgical resection of the burn and repair of the crop and skin is necessary to effect a cure. However, surgery must be delayed until the fistula has formed and all devitalised tissue has become obvious (usually 4-7 days after the incident - see Surgery chapter) The crop has an incredible ability to stretch and even large crop resections seem to be well tolerated by most young birds. Subsequent feedings will obviously need to be reduced depending on the post-operative size of the crop.
  - While waiting for the burn to become clearly demarcated, the chick must be given supportive care:
    - Analgesia and antibiotic coverage
    - Small feeds given frequently so as to avoid distending the crop. Placement of an oesophagostomy tube may be necessary in some cases.

**Crop perforations**

- **Aetiology**
  - Perforation usually occurs when using a metal feeding tube. The tube perforates the crop either because:
    - the chick has an unrestrained feeding response and thrusts up against the tube
    - The person feeding the chick does so roughly or impatiently
  - Food can be deposited outside the crop and under the skin, in some cases without been noticed

- **Clinical signs**
  - Early cases may be presented because of blood on the feeding tube when withdrawn. These birds are usually asymptomatic
  - More advanced cases may be presented because of apparent crop stasis, often with severe systemic illness. Distension is palpable in the crop region, but food cannot be aspirated with a feeding tube

- **Treatment**
  - Surgical removal of the food deposited under the skin, followed by debridement and flushing of the subcutaneous tissues and repair of the crop injury is essential
  - Prognosis is determined by the time lapse since the initial injury and the degree of sepsis present in the patient.
Infectious disease

General
- Infectious diseases are quite common in young chicks; their low level of immunocompetence combined with often sub-standard rearing practices leaves them highly pre-disposed to infection.
- This same lack of immunocompetence means that the progression of an infectious disease in young birds is often rapid – prompt and aggressive therapy is needed to save the patient.

Aetiology
- Bacterial
  - Pseudomonas
  - E. Coli
  - Other Gram negative bacteria
- Fungal
  - Candida
  - Aspergillus
- Viral
  - Polyomavirus
  - PBFD
- Chlamydophila psittaci
- Parasitic
  - Protozoa – Cryptosporidia, Trichomonas, Cochlosoma, Coccidia and Atoxoplasma (in young canaries)
  - Nematodes – Ascarids, Capillaria, Acuaria

Clinical signs
- Lethargy, loss of feeding response
- Pallor or erythema of the skin
- Dehydration
- Crop stasis
- Vomiting/regurgitation
- Weight loss or failure to thrive
- Subcutaneous haemorrhage
- Feathering abnormalities
- Sudden death

Treatment
- Identify aetiological agent & treat accordingly
- Support the patient

Further Reading


