

# Psittacine Viral Diseases

*A PowerPage Presented By*



All of the following viral diseases cause serious and often fatal disease in psittacines with devastating impact on aviculturists and private owners. Avians make up only a small percentage of boards questions and you are likely to only see a couple of questions about these diseases. A common feature of all of these viral diseases in birds is that prevention is the best method of control since diagnosis and disease management is difficult. Pre-purchase assessment consisting of appropriate tests, quarantine, good hygiene and husbandry (low stress environments), vaccination of appropriate birds (when available), routine health examinations and a thorough understanding of the biology of the virus are essential for management. Stress can precipitate significant morbidity and mortality. This PowerPage reviews:

- Psittacine Beak and Feather Disease (PBFD)
- Proventricular Dilatation Disease (PDD)
- Pacheco's Disease
- Polyomavirus

## Psittacine Beak and Feather Disease (PBFD)

### Pathogenesis and Epidemiology

- Two variants of circovirus
  - Single stranded circular DNA virus
  - Circovirus-1(PsCV-1), original PBFD virus, high morbidity and mortality
  - Circovirus-2 (PsCV-2), specific to lories, less severe and birds can recover
- Reported in wild and captive psittacines (over 60 species)
  - Old World psittacines most susceptible; especially young birds
- Transmission is most common by contact with contaminated feathers but feces and oral secretions also reported
  - Virus is stable in environment, highly contagious, serious problem

### Clinical Signs

- **Feather loss** and feather dystrophy
- **Beak defects** more common in cockatoos
- Peracute, acute and chronic forms possible
- Most birds eventually die with PsCV-1
- Immunosuppressive, so secondary infections are noteworthy

### Diagnosis

- Suspect any psittacine with progressive feather loss involving abnormal feathers
- Most reliable is **PCR**, using circovirus-specific DNA probes
- Histology reveals characteristic **inclusion bodies** in skin, feathers
  - Feather shaft necrosis and ballooning degeneration of epithelial cells lining the developing feather

### Treatment and Control

- Identify positives, remove from flock and practice good hygiene
- Vaccine is under investigation
- Supportive care is only treatment

## Proventricular Dilatation Disease (PDD)

- Synonyms: **Psittacine Wasting Disease, Macaw Wasting Disease**

### Pathogenesis and Epidemiology

- **Avian Borna Virus** (Multiple etiologies suggested in past; now known to be ABV as of 2008)
- Any psittacine but **macaw, cockatoos and conure** seem most susceptible
- Transmission poorly understood but it is likely fecal/oral
- Incubation may be weeks or years

### Clinical Signs

- Nerve supply to proventriculus, ventriculus and small intestine are destroyed causing inability to digest food properly
  - **Regurgitation, vomiting**, progressive weight loss
  - **Passage of undigested food, abdominal and crop distention**
  - Neurological disease with **ataxia, tremors, seizures**
- Classic sign is **severely dilated thin wall of the proventriculus** which can be seen **radiographically**
- Most frequently a fatal neurotropic disease

### Diagnosis

- Presumptive diagnosis can be made from clinical signs, radiographs
- Antemortem biopsies of intestine sometimes helpful
- Histology is most reliable revealing a **lymphoplasmocytic ganglioneuritis**
- Necropsy reveals **dilated gastrointestinal tract**

### Treatment and Control

- Only treatment is supportive, including NSAIDs, since disease seems inflammatory
- Place exposed birds in isolation; they may live normally for years

## Pacheco's Disease

### Pathogenesis and Epidemiology

- Herpesvirus
  - Double-stranded DNA virus, several variants
- Transmission
  - Highly contagious with high morbidity and mortality, all ages of psittacines
  - Most common in multiple bird homes and aviaries
  - Transmission by direct contact with infected feces, ocular/nasal discharge
  - Birds can be asymptomatic carriers of Pacheco's virus
  - Any bird surviving an outbreak is likely a "latent" carrier of the virus

### Clinical Signs

- Birds with sudden death in aviaries are highly suspect
- Lethargy, anorexia, diarrhea, **green urates** (indicative of liver damage)
- Sinusitis, conjunctivitis and neurological signs
- Enlarged liver, spleen and kidneys
- Acute viral hepatitis with liver necrosis

### Diagnosis

- PCR of blood and cloacal swab for herpesvirus DNA
- Diagnosis is usually made on postmortem



- Virus isolation and characteristic histopathology including **hepatic inclusion bodies**
- Reliable serological test not available
- Consider Pacheco's disease in **any psittacine that dies suddenly with no previous signs of illness**

### Treatment and Control

- A killed virus vaccine is available but its effectiveness and use is controversial
- PCR testing to determine whether or not birds are infected then remove
- Acyclovir is effective against some strains of Pacheco's but may cause kidney damage
- Generally untreatable so supportive care important

## Polyomavirus

### Pathogenesis and Epidemiology

- Avian Polyomavirus (APV)
  - Double-stranded DNA virus
  - Originally described in budgies, hence the historical name Budgerigar Fledgling Disease (BFD)
- Transmission
  - Latent carrier state is common with adult birds appearing clinically normal until they undergo stress
  - Significant disease of aviculturists worldwide, especially young birds
  - Extensive host range
  - Transmitted by direct contact with infected material via feather dust, feces, aerosols, and parental feeding of chicks
  - Thought to spread vertically (via egg) as well

### Clinical Signs

- High mortality in young psittacine birds
- Lethargy, anorexia
- Delayed crop emptying, regurgitation
- Diarrhea
- Feather abnormalities
- Petechiae, acute death can occur
- Acute and chronic forms are seen

### Diagnosis

- DNA PCR probe test of feces and blood is good but will only catch birds actively shedding and not latent carriers
- Serology unreliable in most psittacines (except budgie) and only identifies exposure, not actively shedding birds
- Histopathology with **viral intranuclear inclusion** bodies in the liver, kidney, spleen, heart and feather follicles

### Treatment and Control

- Closed breeding aviaries are recommended
- Cloacal swab on all birds leaving an aviary and all newly acquired birds before being introduced into a collection
- APV vaccine appears encouraging in certain situations but usefulness is controversial, not indicated in all psittacines

