

Marie Curie Training Courses

Summer School 2007 – Avian V5/V6

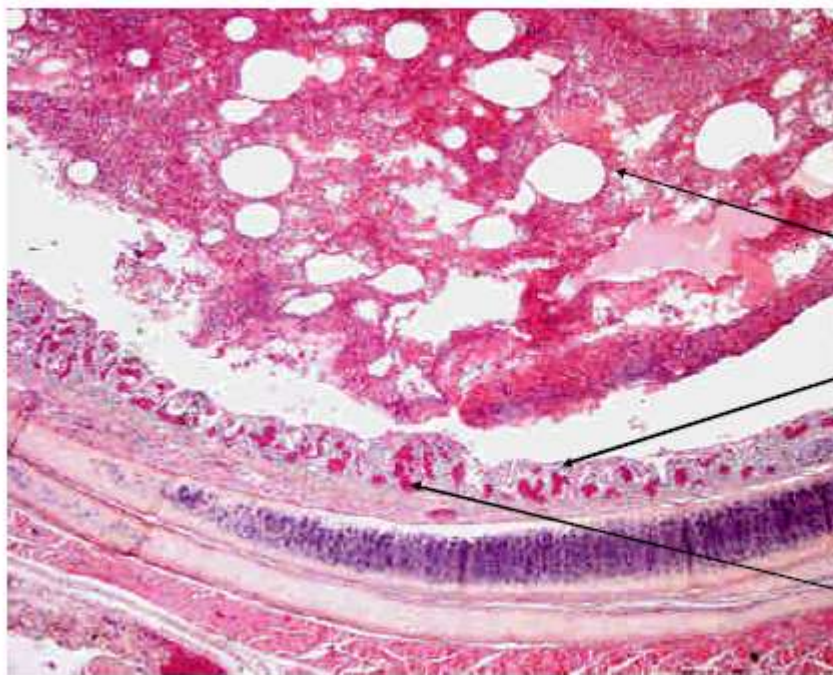
NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

- 2 new histological cases: Practical

- ◆ V5: Chicken, 14 weeks old, severe respiratory syndrome with mortality
- ◆ V6: Young farmed pigeon, «Young Pigeons Disease Syndrome :YPDS» with mortality

NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

- V5: Chicken, 14 weeks old, trachea



3 associated
pathognomonic
features

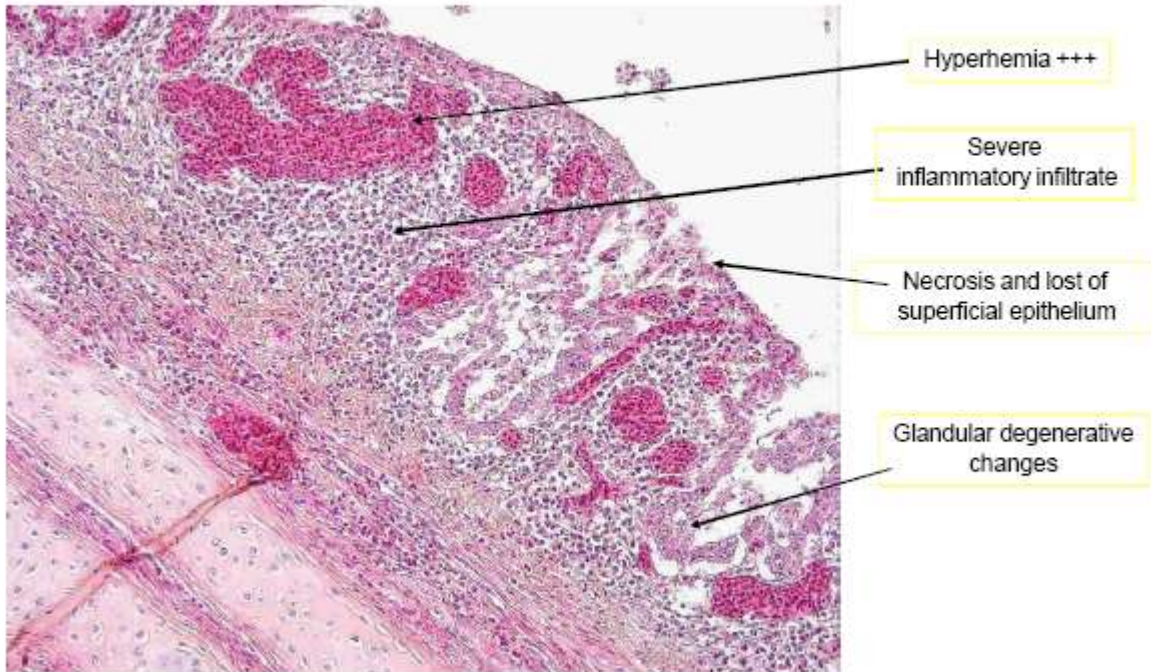
± abundant
necrotico-hemorrhagic
exudate in the lumen

Extensive epithelial
necrosis with lost of superficial
epithelium

Severe hyperemia
of the lamina propria

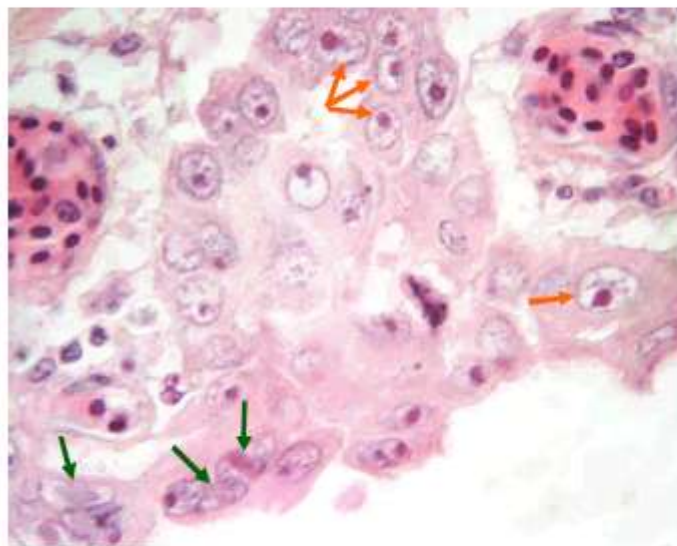
NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

- V5: Chicken, 14 weeks old, trachea

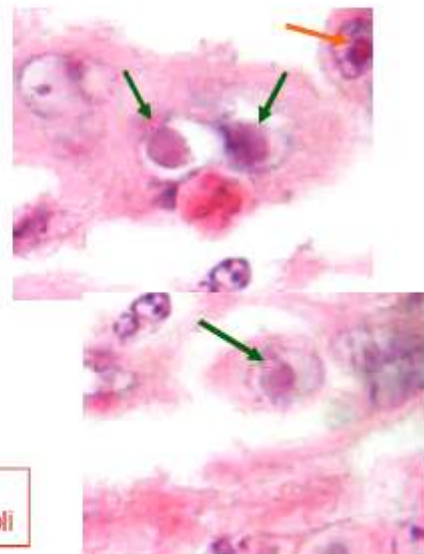


NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

- V5: Chicken, 14 weeks old, trachea



Rare, small, acidophilic, intranuclear inclusions bodies. Most of the time grouped in epithelial cells

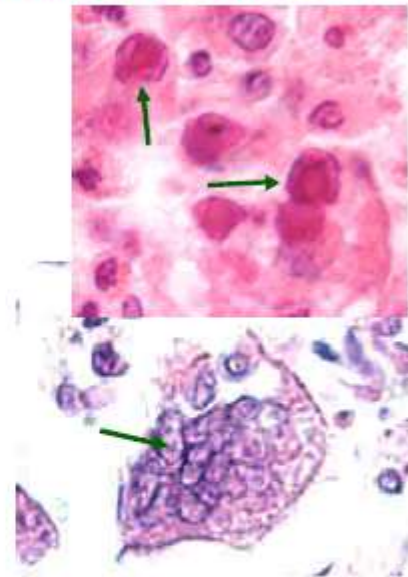
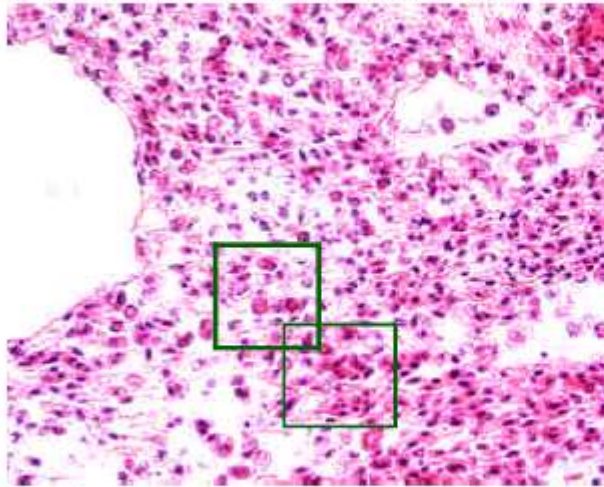


Be careful!
don't confuse inclusion bodies with hypertrophied nucleoli

NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

- V5: Chicken, 14 weeks old, trachea

If you don't identify clearly inclusion bodies in epithelium, search them in the desquamated cells in the exsudate



Inclusion bodies often present in desquamated syncytial cells

Conclusion:

Acute, severe, diffuse, exsudative, hemorrhagic and necrotizing tracheitis with few intranuclear acidophilic inclusion bodies in epithelial cells :
Infectious Laryngotracheitis (Herpesvirosis)

NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

- Avian Herpesviruses: An overview

📌 The most important avian Herpesvirosis

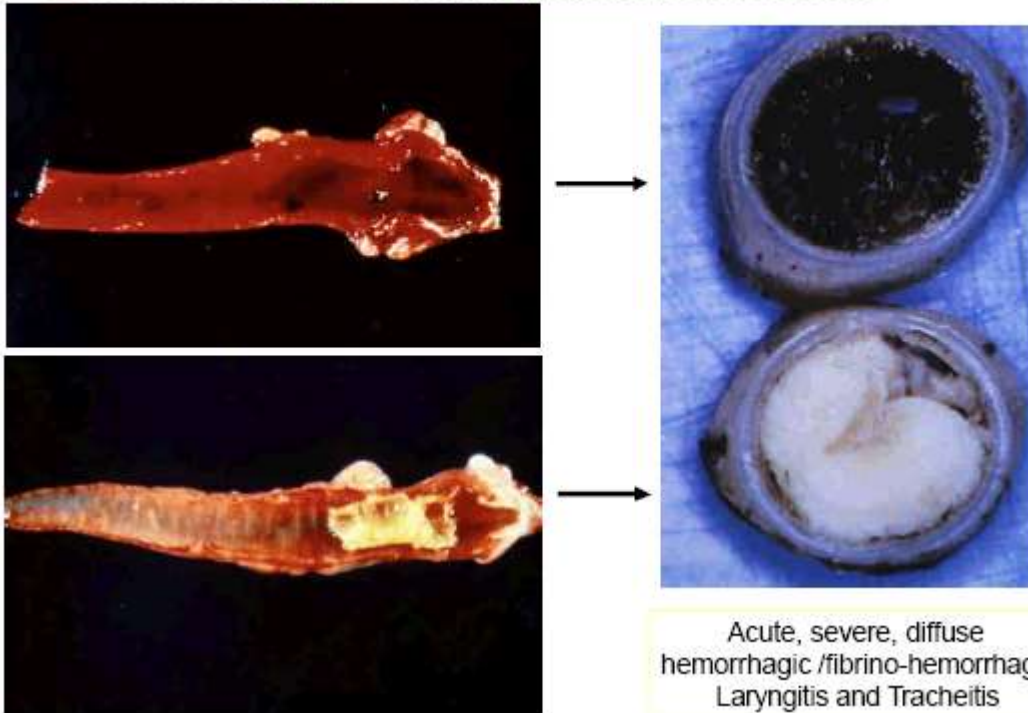
Diseases	Avian species	Main locations
Infectious Laryngotracheitis (Gallid Herpes Virus 1)	Chicken Pheasant ?	Respiratory tract
Duck plague (Duck viral enteritis)	Duck and muscovy duck goose, swan	Malpighian mucosae, intestine (Peyer's Patches), liver , thymus, Fabricius bursa
Pigeon Herpesvirosis (Columbid Herpes virus 1)	Pigeon	Malpighian and respiratory mucosae, liver , pancreas, myocardec
Pacheco disease (more than one herpesvirus ?)	Psittacines	Liver , spleen, intestine, pancreas



NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

• Avian Herpesviruses: An overview

☑ Infectious Laryngo-Tracheitis (chicken): Gross lesions



Acute, severe, diffuse hemorrhagic /fibrino-hemorrhagic Laryngitis and Tracheitis

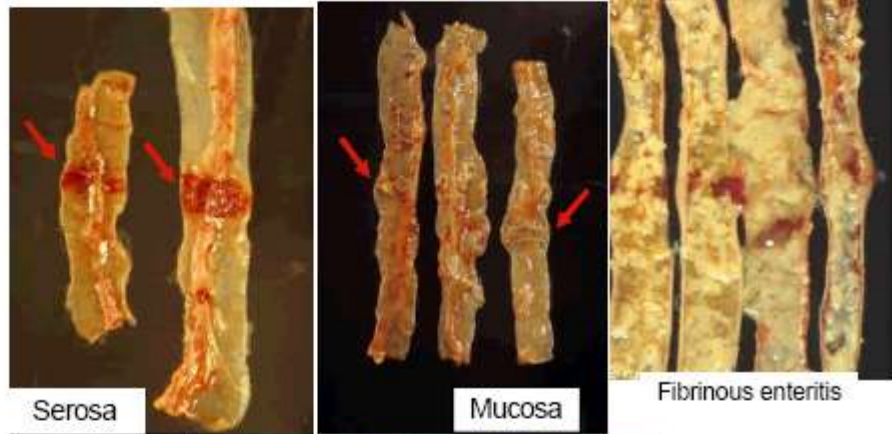
NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

• Avian Herpesviruses: An overview

☑ Duck Viral Hepatitis : Duck plague (Gross lesions)

Hemorrhagic and necrotic intestinal annular bands visible from serosal and mucosal surfaces (Lesions restricted to lymphoid annular aggregates)

↓
Pathognomonic gross lesion
± associated with

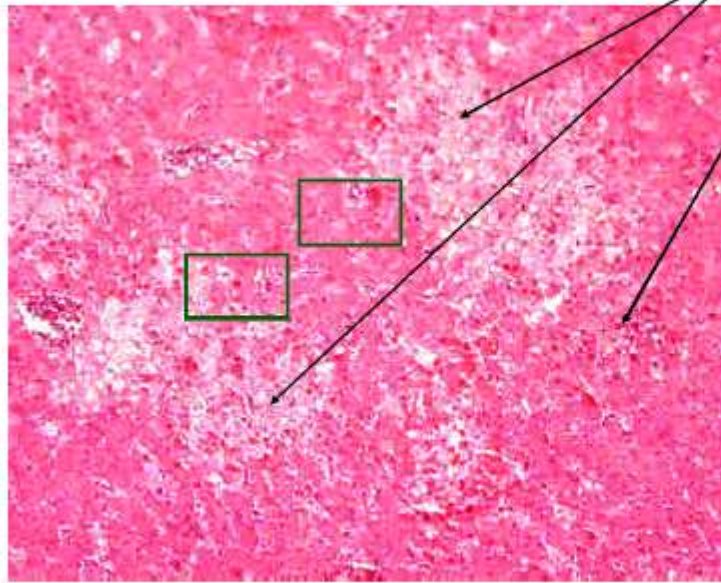


And multifocal, moderate to severe necrotizing hepatitis
Rare, intranuclear acidophilic inclusion bodies in hepatocytes and mucosal cells

NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

- Avian Herpesviruses: An overview

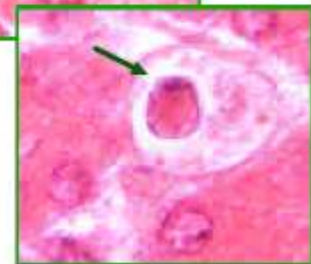
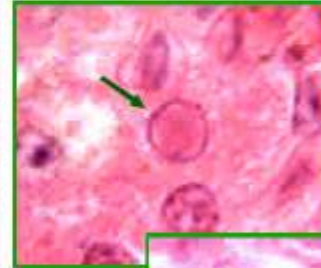
- ▣ Pigeon Herpesvirosis: Histology (Liver)



Multifocal, moderate to severe, necrotizing hepatitis

Moderate inflammatory infiltrate

In hepatocytes surrounding necrotic foci, rare, acidophilic intranuclear inclusion bodies



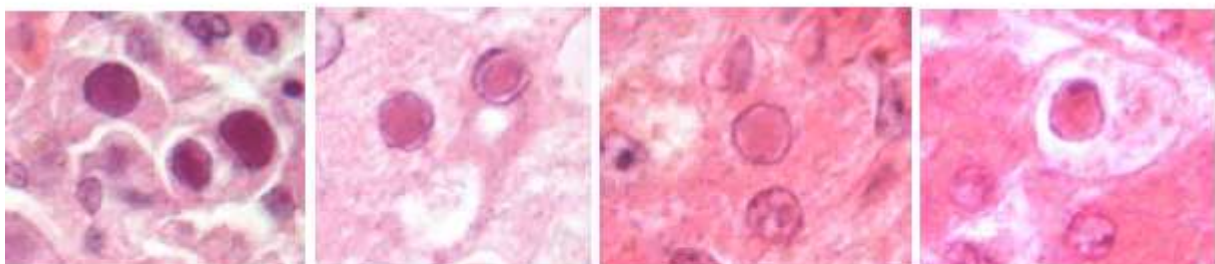
Differential diagnosis with pigeon adenovirosis?

NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

- Avian Herpesviruses: An overview

- ▣ Differential diagnosis between adenovirosis and herpesvirosis in pigeon ?

- ↻ Epidemiology, clinic and evolution not clearly different
- ↻ Lesion: Moderate to severe multifocal necrotizing hepatitis
- ↻ Intranuclear inclusion bodies



ADENOVIROSIS

⋮
○

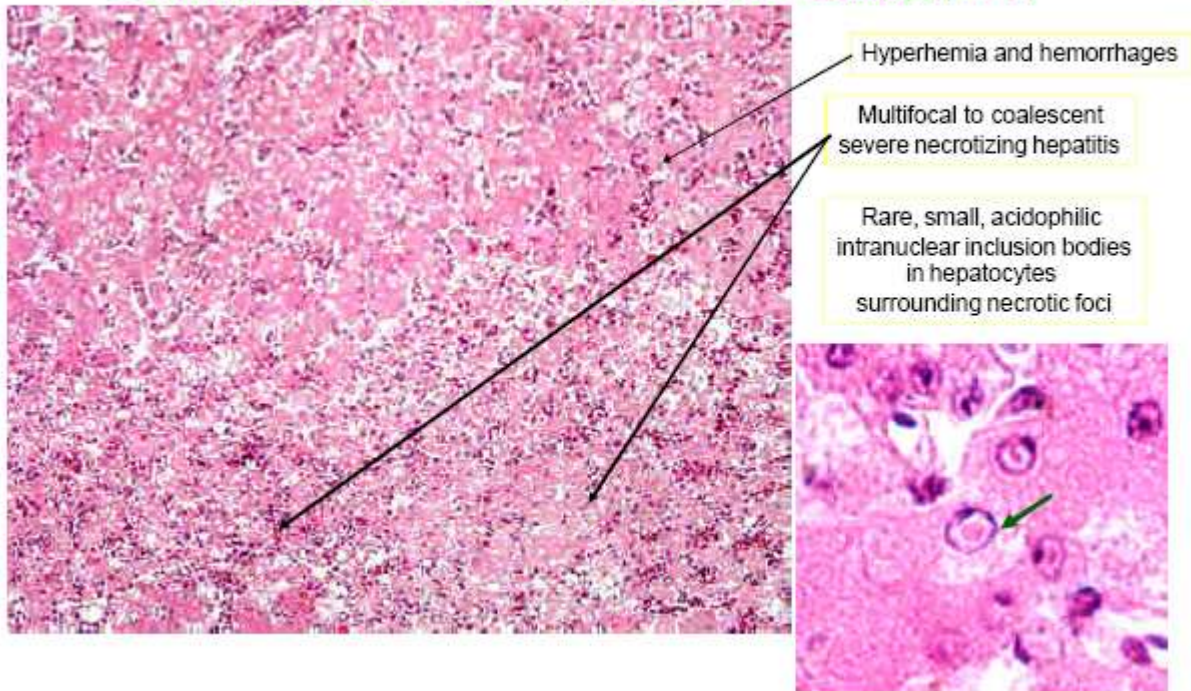
HERPESVIROSI

Differential histological diagnosis, sometimes impossible!!

NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

- Avian Herpesviruses: An overview

- ☒ Psittacines herpesvirus : Pacheco disease, Histology (Liver)



NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

- Avian Herpesviruses: Conclusion

- ☒ Frequent (cage birds)

- ☒ Severe and generalized

- ☒ Lesions

- ☒ Necrosis +++

- ◆ Respiratory and digestive mucosae

- ◆ Lymphoid tissues

- ◆ Liver +++

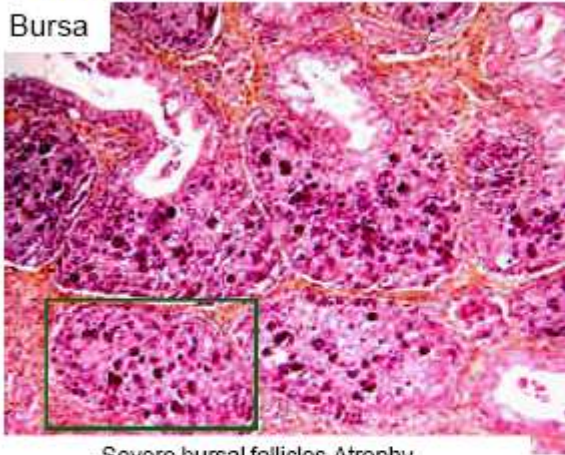
- ☒ Acidophilic intranuclear inclusion bodies

- ☒ Differential diagnosis with adenovirus (pigeon, psittacines)?

NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

• V6: Young farmed pigeon

Bursa

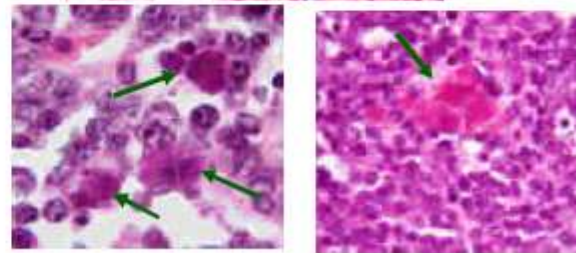
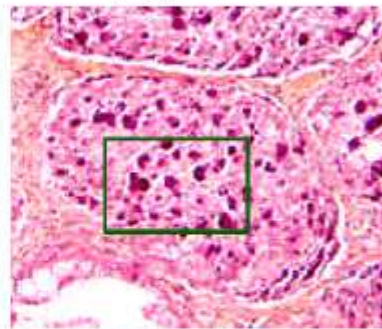


Severe bursal follicles Atrophy
Severe Aplasia of lymphoid tissue
Disappearance of cortico-medullar limits,
Numerous and voluminous basophilic elements

Etiology : Pigeon Circovirus

Did you recognize the organ?

Voluminous, multigranular, botryoid, irregular amphophilic intracytoplasmic inclusion bodies in macrophages and reticular cells



Similar lesions, but less severe, in Thymus, Spleen lymphoid tissue, GALT...

→ Immunosuppression → «Young Pigeons Disease Syndrome :YPDS»

NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

• Avian Circovirus: Psittacine Beak and feather Disease (Pbfd)

☑ First identified pathogenic
Circovirus

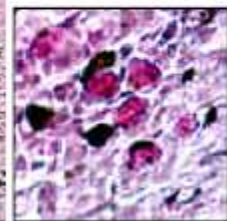
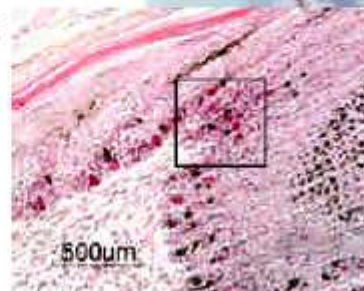
☑ More than 35 psittacines
species

☑ Clinical signs and lesions

- ⚡ Chronic feathers and beak dystrophy with badly formed and damaged feathers with alopecia (head +++), loss of feather pigmentation, plucking, beak necrosis, sloughing of claws
- ⚡ Atrophy of bursa, thymus and bone marrow (panleucopenia)
- ⚡ Histo: pterigitis, pulpitis, dermatitis
Bursa, thymus and bone marrow aplasia
Intranuclear and intracytoplasmic inclusion bodies in macrophages and epithelial cells

☑ Severe immunodepression

- ⚡ With secondary infectious diseases
- ⚡ Sudden death (young birds)



NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

• Avian Circovirus

☒ Viral family : Circoviridae

☒ 3 different and recent entities

- ☒ Psittacine Beak and feather disease (PBFD)
 - ☒ Pigeon Circovirosis
 - ☒ Chicken Infectious Anemia: CIA
- Genus: Circovirus
- Genus: Gyrovirus
-

☒ Consequencies of circovirus infection

- ☒ Severe and generalized lymphoid Aplasia
- ☒ Severe and total Immunosuppression
- ☒ Secondary Infectious diseases

- ☒ Circoviridae : New viral family in the group of pathogenic viruses
- ☒ No inclusion bodies in CIA
- ☒ Circovirosis : new disease in piglet = PMWS (PCV2)

NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

• Study plan

☒ Non tumoral viral diseases WITH inclusion bodies

- ☒ Viral diseases with intranuclear inclusion bodies
 - ◆ Adenovirosis
 - ◆ Herpesvirosis
- ☒ Viral diseases with intracytoplasmic inclusion bodies
 - ◆ Circovirosis
 - ◆ Poxvirosis

☒ Non tumoral viral diseases WITHOUT inclusion bodies

- ☒ Lesions focused (located) on ONE organ
 - ◆ Infectious Bursal Disease = Gumboro Disease
- ☒ Association of lesions
 - ◆ Avian encephalomyelitis

NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

- **Avian Poxvirus: Fowl Pox**

- ☑ **Avipoxvirus (numerous different strains of virus)**

- ☑ **More than 60 Susceptible Avian Species**

- ☛ Chicken, Turkey, Pigeon

- ☛ Wild and cage birds (canary, parrots, wild pigeon ...)

- ☑ **Gross lesions**

Clinical forms	Location	Gross lesions
Cutaneous form (Hypertrophic: dry form)	Glabrous cutaneous areas (comb, eyelids, basis of the beak, digits)	Papules, yellow nodules, (vesicles), scabs
Mucosal form (Diphtheritic: wet form)	Mucosa of the oral cavity, pharynx, oesophagus, sinuses and larynx	Nodules + necrotic and fibrinous diphtheritic inflammation

NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

- **Avian Poxvirus : Gross lesions**

- ☑ **Cutaneous form (Poultry)**



Multifocal to coalescent brown to black, scabby nodules, mainly located on comb, eyelids, wattles, basis of the beak

In some cases (Turkey)
numerous coalescent necrotizing nodules on cutaneous glabrous areas of the head



NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

- Avian Poxvirus : Gross lesions
 - ☑ Cutaneous form (wild and cage birds)



Gull



Canaries



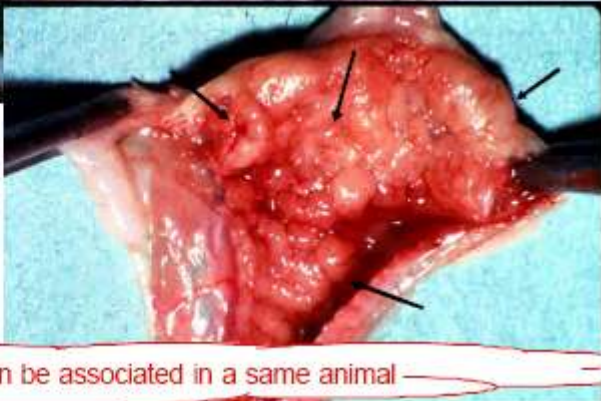
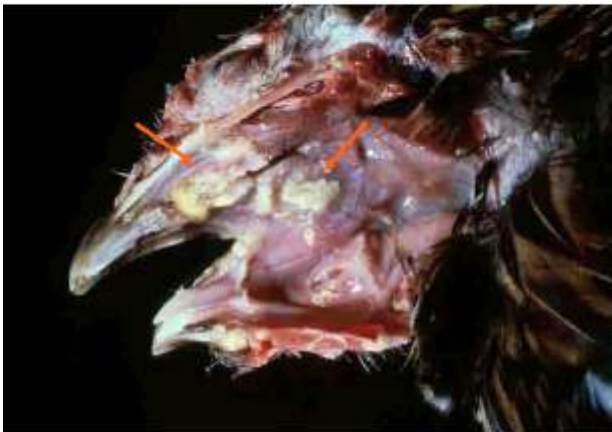
White stork



Sparrow

NON TUMORAL AVIAN VIRAL DISEASES WITH INCLUSION BODIES

- Avian Poxvirus : Gross lesions
 - ☑ Mucosal form (Wet form)



Yellow, cheesy, isolated to coalescent nodules, covered with yellowish diphtheritic membranes

Located on tongue, oral cavity, pharynx, larynx
May extend to trachea, sinus and oesophagus

Cutaneous and mucosal forms can be associated in a same animal