VIRAL DISEASES

NEWCASTLE DISEASE (ND)

Etiology:

This avian disease is caused by infection with the avian paramyxovirus-1 (PMV-1 or Avulavirus 1). A raptor may be infected by direct contact to sick birds or by eating infected prey or food animals (especially poultry and pigeons) which have been vaccinated against PMV-1.

Clinical signs:

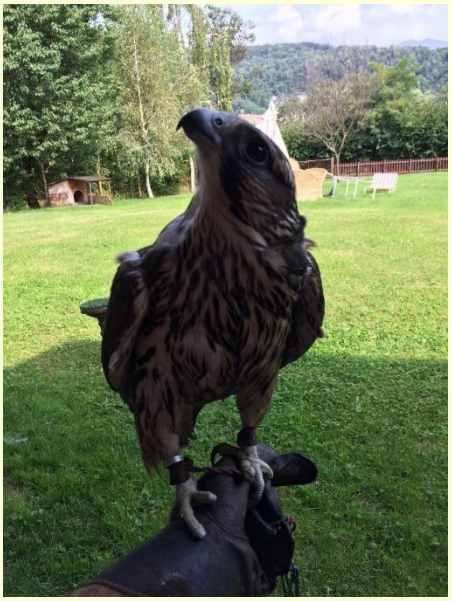
The most recognizable effects are neurologic (torticollis, tremors, ataxia) and respiratory (conjunctivitis) signs. On the other hand, raptors are also prone to vomiting, anorexia and diarrhea. ND may also lead to sudden death, especially in juvenile individuals.

Diagnosis:

The disease usually progresses so quickly so that the diagnosis is often difficult in living birds. It may be detected by making a PCR analysis upon a cloacal swab or by analyzing samples from carcasses during postmortem analysis, histopathology and immunohistochemistry. Serology is another option in subacute to chronic courses of the disease.

Treatment:

In absence of a specific therapy supportive care to relieve clinical disease and side effects is the only option for treatment. However, euthanasia might be indicated in most cases.



Neurological sign: head tilt, one of the typical signs of Newcastle Disease

Prevention:

Contact to potentially infected poultry that may spread the virus through respiratory secretions and feces should be prevented. The source of food animals should be carefully selected. In endemic areas, it may be advisable to vaccinate raptors with inactivated PMV-1 vaccines, but specific vaccines for raptors are not available in most countries and a full protection cannot be achieved by vaccination.

In any case quarantine after accession and transport, thorough cleaning and disinfection are highly recommended to prevent the introduction of PMV-1 in the collection.

AVIAN POX / FALCON POX

Etiology:

The infectious agent of this disease is the avipox virus (APV). APV is spread by biting insects (mosquitoes, biting flies) or by direct contact with infected animals or contaminated materials.

This virus cannot penetrate the intact skin, but it can penetrate the skin and enter the body through wounds. Since the virus can also survive for lengthy periods in crusted wounds, shed skin and scabs, quarantine and decontamination must be particularly strict.

Clinical Signs:

There are two main forms of this viral disease, the dry and the wet form. Firstly, the dry or cutaneous form affects the outer skin, visible at featherless areas (feet, eyes, nose, beak), and causes the formation of ulcerated scabs.

If no secondary infections complicate the disease, the lesions may heal completely after 3-4 weeks. Scars on the stricken areas may remain and in severe cases beak deformities or beak loss have been reported.

The second form, the wet or diphtheric form is more severe, but less common in raptors. It affects the mucous membranes of mouth, pharynx, trachea and esophagus and leads to the formation of caseous plaques. This may be associated with anorexia, sepsis and potentially death.

Extremely skinny gyr affected by a chronic disease

Diagnosis:

Cutaneous lesions are easily recognizable; histopathology can confirm the diagnosis by revealing the presence of intracytoplasmic inclusion bodies inside the enlarged and hyperkeratotic epithelial cells.

These so-called Bollinger Bodies are typical for most pox viruses. Molecular biology (PCR) from cutaneous or diphtheric lesions is also a fast and reliable diagnostic tool.

Treatment:

The secondary infections may be treated by using systemic antibiotics. The wounds must be cleaned and disinfected (e.g. using iodine solution). The systemic and local application of Vitamin A may support the recovery of skin and mucous membranes. The surgical removal of large lesions may be effective in some cases. However, traditional burning of the lesions without suitable medical equipment and analgesia should be avoided, as this commonly worsens the situation and is painful for the birds.

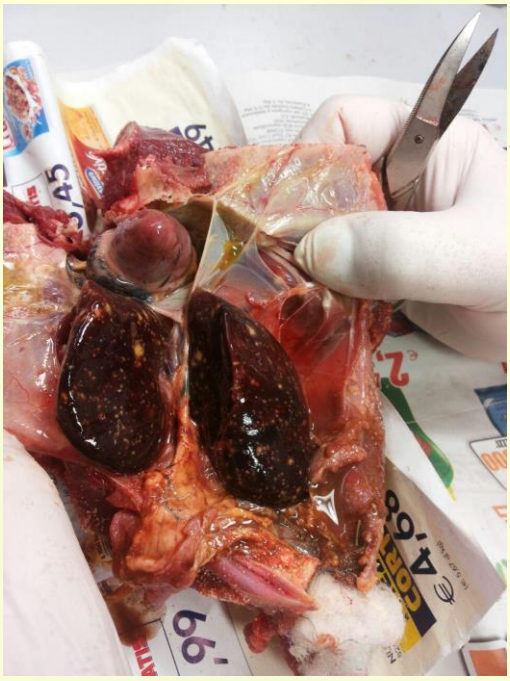
Prevention:

Effective methods for prevention are insect control. A reduction of mosquitoes and flies may be achieved by removing their breeding sites such as ponds and puddles, by keeping fish at water sites, by using pheromone or light traps and by installing small insect nettings around and inside the aviaries. Regarding direct transmission, a contact of healthy individuals to contaminated fomites (gloves, shoes, perches) should be avoided and quarantine procedures should be strict. For specific prophylaxis a vaccination using pigeon pox and turkey pox vaccines may be tried. However, these vaccines contain a different pox virus than the pox strains which usually affect raptors (heterologous vaccines). Therefore, in some cases vaccination with these strains seemed to prevent or improve clinical pox disease, but in other cases no effect has been observed at all. A flock-specific vaccine may be prepared, using virus that has been isolated from affected birds, to protect other individuals in the same collection.

HERPESVIRUS

Etiology:

Infections with herpesviruses may be harmful for different raptors, in particular for falcons, owls and some eagle species. The virus is mainly transmitted by ingestion of infected pigeons, as the herpes virus of pigeons is very similar or identical to the virus of falcons and owls. Moreover, the virus may be transmitted through the respiratory and the oro-pharyngeal route.



During necropsy the liver shows a hepatitis probably caused by Herpesvirus

Clinical Signs:

Affected birds usually become depressed and anorexic; they suffer from inflammation and necrosis of liver and spleen which may be associated to enlargement of liver and spleen and to the shedding of lime-green urates. The infected raptor usually dies within two days after displaying the first clinical signs. In some cases birds may even die prior to displaying any clinical signs.

Diagnosis:

The virus may be isolated from the tissues of the dead raptors, which can also be the subject of PCR analysis. Likewise, PCR from blood, pharyngeal and cloacal swabs may be suitable in living birds. The disease usually develops too fast to enable antibody formation and testing, but in rare chronic cases serology may be valuable.

Treatment:

The raptor must receive supportive care and antiviral treatment (e.g. acyclovir). However, this disease is unlikely to be healed. At least a carrier status (latency status) of animals must be considered for the unlikely case of recovery from the clinical disease.

Prevention:

The raptors must not be fed with untested but only with specifically herpesvirus-free pigeons and doves. In general feeding of pigeons/doves should be regarded as risky. Regarding direct transmission, a contact of healthy individuals to contaminated fomites (gloves, shoes, perches) should be avoided and quarantine procedures should be strict.

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Photo courtesy of:
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