Adenoviruses

About adenoviruses

Adenoviruses and DNA viruses that do not have a viral envelope around them, making them smaller than some other DNA viruses. There are many strains of adenovirus, and the vast majority are adapted for a specific host species so often cause subclinical disease, meaning illness may not be obvious. However, adenoviruses do cause disease in the young, the elderly, and in immunosuppressed individuals by making them more susceptible to concurrent diseases.

Routes of transmission – how adenoviruses are spread

Adenoviruses are usually spread via the faecal-oral route, meaning that ingestion of faeces or matter that has been in contact with infected faeces is required. However, it is also possible for these viruses to be directly passed from an infected adult to its offspring through the egg.

These viruses can remain hidden in the body to cause disease at later times. In people, the viruses remain in lymphoid tissues, but the tissue involved in reptile species has not yet been confirmed.

Clinical signs (symptoms)

The majority of adenoviruses affect only the species they are targeted to, so usually cause silent disease. However, the virus does cause clinical disease if infecting a species that is not the usual host, or in the immunosuppressed. In these cases, adenoviruses have a preference for dividing cells because these offer the best chance of viral propagation. These cells are mainly found in the gastrointestinal tract, the lungs, the liver, the kidneys, and the central nervous system.

- ❖ **Bearded dragons & Rankin dragons** often present with ill-thrift (not growing as well as they should do), anorexia and weakness. Adenovirus in these species causes a wasting disease (indeed, it is often referred to as Wasting Disease amongst collectors) that causes lethargy and depression. Affected dragons often exhibit distension of the coelomic cavity (similar to the mammalian abdominal cavity) and may have difficulty breathing as a result of this.
- ❖ **Kingsnakes & serpentines** often regurgitate and exhibit dehydration. They may have abnormal movements or behaviour because of the affects of adenovirus on the central nervous system, and eventually may become unresponsive and pass away.
- ❖ **Monitors & rosy boas** do not tolerate adenovirus at all, but suffer a peracute disease course, i.e. they very rapidly succumb to infection and pass away before any clinical signs can develop.
- ❖ **Chameleons** also do not tolerate adenovirus well and suffer a peracute course, but in some cases clinical signs may develop. Affected chameleons suffer inflammation of the airways and oesophagus, and the attack of the virus on the nervous system is so severe that it can cause complete and prolonged spasm of every muscle in the body simultaneously. In patients that develop clinical signs, death occurs within 3 days.

Diagnosis of adenovirus

Diagnosis, as will so many viruses, can be achieved using a laboratory technique to replicate and grow viral DNA on swabs from affected tissues, or sometimes from the blood. In some cases, a liver biopsy may provide the most accurate diagnosis. Unfortunately, diagnosis is usually confirmed at post-mortem examination in some species.

Treatment

There is no specific treatment for adenovirus, so treatment is provided in the form of supportive care, sometimes intensively.

Affected individuals should be isolated immediately in a separate airspace from other animals in the collection, and the quarantine period must not be less than 6 months. Strict hygiene must be observed when dealing with affected patients – that should be dealt with after the healthy animals are dealt with – including hand washing, disinfection of the enclosures, and clothing changes. Disinfection must be with an iodophore disinfectant, aldehyde or formalin.

Affected patients require nutritional and fluid support, and may also require course of antibiotics to clear any secondary infections (those that take hold because of the immunosuppression caused by adenovirus). Any factors causing stress should be removed.