



PINMOORE ANIMAL LABORATORY SERVICES

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Reptile Pathogens

Chelonian Mycoplasma sp and Herpes viral infections

In turtles and tortoises, an infection with a virulent *Mycoplasma agassizii* strain causes the so-called Upper Respiratory Tract Disease (URTD). This disease is characterised clinically by serous, progressing to a purulent ocular-nasal discharge. Conjunctivitis and ocular oedema are also clinical presentations. Lethargy, dehydration and anorexia can occur with severe clinical disease. It has been implicated as a cause of widespread mortality in wild and captive chelonians. A substantial characteristic of Mycoplasmosis is latency, without causing disease symptoms. Secondary infections are common and it has also been identified in combination with Herpes virus infections.

Herpes viral infections are also commonly found and can lead to a variety of clinical signs ranging from conjunctivitis, nasal discharge and stomatitis. In severe cases this can lead to secondary infections with fungal and bacterial pathogens. Pneumonia, lymphoproliferative disease and a haemorrhagic syndrome have been reported in captive chelonians with herpes viruses. Latency is also a feature of these viruses and an infected animal is considered a potential carrier for the rest of its life.

A direct detection of *Mycoplasma* can be done via culture or by means of PCR. However, the detection via culture can take up to six weeks, while the success is also dependent on the quality of the sample material. In contrast, the PCR enables a diagnosis within 7 days.

Herpes viruses can typically be detected from cytology or histopathology samples in clinical cases. However if there is minimal exudate this may be impractical. Herpes virus PCR is available and is the most useful screening tool.

Suitable samples to consider submitting: plain Conjunctival swabs, plain oral swabs, nasal flushes.

Agamid Adenovirus 1

A variety of Adenoviruses have been identified in reptiles. The most problematic so far is the Agamid adenovirus 1.

Fatal gastroenteritis and hepatitis have been reported in a variety of lizards, but one of the most commonly affected is the Bearded dragon (*Pogona vitticeps*). Typical individuals infected are the young stock and clinical signs presenting can be an acute depression and anorexia. This is quickly followed by death. Other animals can have a more latent progression of the disease and present as a poor doing stunted individual. Many animals can have secondary infectious agents present such as *Microsporidium* or *Coccidiosis*.

Histopathology can identify the inclusion bodies associated with Adenoviruses. These typically are basophilic and intranuclear. The liver is a good site to biopsy for a diagnosis. However, there is now a PCR test available to check for Adenovirus DNA. Suitable samples to submit include plain cloacal or oral swabs. These are best sent in a sterile universal. This is a one step PCR specifically for Agamid Adenovirus 1.

Post mortem examination can reveal multiple haemorrhages and a severe hepatopathy. It is likely the haemorrhages reflect the severity of the hepatic disease. Histopathological changes can be found in the liver, pancreas, kidney and intestinal mucosa.

Ophidian Paramyxovirus

Ophidian Paramyxovirus affects the respiratory and central nervous systems in snakes. Clinical signs are 'star gazing', head tilt, dyspnoea, paralysis and sudden death. PMV can be detected using a serology test done on a serum sample, not from a gel tube. This gives a negative or positive result along with a titre. A PCR test is now also available, this is performed on a plain oral or cloacal swab or tissue from brain or lung.



Inclusion Body Disease

Inclusion Body Disease (IBD) is thought to be caused by a retro virus and until recently was only thought to affect boids, i.e. boas and pythons; it is not commonly found in colubrids. Clinical signs can include regurgitation especially in boas, neurological signs including 'star gazing', head tilt, tremors and paralysis, loss of condition and sudden death. The definitive way to diagnose IBD is a biopsy of the kidney, liver or pancreas or on post mortem samples of the brain, pancreas, liver and kidney. A test done on an Oesophageal swab and EDTA blood sample is also available although this test only has a success rate of 30% as the viral inclusion bodies can be difficult to find. Unfortunately there is no effective treatment available for IBD and positive snakes should be euthanased.



Cryptosporidia

Cryptosporidia can infect all reptiles, the clinical signs vary from regurgitation in snakes to watery diarrhoea and wasting away. Positive reptiles should be isolated from the main collection immediately and euthanased. All other animals within the collection should then be tested. At present there is no totally effective treatment available. This is a zoonotic disease and can be especially harmful to immunocompromised human individuals.

Diagnosis of Cryptosporidia is via special staining or an antigen test, both of which are performed on faecal samples.



Coccidia

Coccidiosis can be a significant protozoal infection in reptiles, clinical signs include anorexia, weight loss and diarrhoea. Infection is via ingestion of Coccidial oocysts, the most commonly found is Isospora and Eimeria species.

Diagnosis of Coccidiosis can be based on demonstration of oocysts in faecal flotations.



Nematodes

Nematodes (pinworms) are a common finding in reptiles. Clinical signs include diarrhoea and weight loss. Low levels of Nematodes are classed as normal faecal flora, anymore than that should be treated.

Diagnosis of Nematodes can be confirmed in faecal flotations.



Flagellates

Ciliates are commonly seen in reptile faeces and can be found in high numbers in sick Chelonia. Significance must be determined clinically as this may be secondary overgrowth due to digestive disturbances, these are usually commensals such as Balantidium coli and Nyctotheroides in tortoises. In reptiles Monocercomoids and Trichomonids are common findings and can be found in warm faeces.

Diagnosis of Flagellates can be confirmed in faecal flotations.

Hexamita can cause renal disease, most likely to be found in urine in the highest numbers. Definitive diagnosis is histology of kidney samples.

Tapeworms, Pentostomids and Flukes can also be found and are commonly associated with 'wild caught' reptiles. Amoebiasis can also be seen.

