Vetpath is a specialist veterinary laboratory dedicated to providing our clients with the finest laboratory diagnostic service. A team of veterinary pathologists and medical scientists with extensive experience in veterinary diagnostic pathology forms the core of the Vetpath team.

VNews

VETPATH LABORATORY SERVICES

DECEMBER 2015

Pathology of Heat Stroke

Heat stroke is a serious veterinary emergency that affects multiple organs. The risk of heat stroke in our patients is increasing as the weather warms up.

Heat stroke can occur due to exposure to high external temperatures (classical heat stroke) or can be exertional (due to strenuous exercise). Predisposing factors for heat stroke include obesity, cardiovascular or respiratory abnormalities, or thick hair coat. In addition, environmental factors such as lack of shade and ventilation, water deprivation and some medications can also increase the risk of heat stroke.

Exposure to increased body temperature initiates a series of protective mechanisms in the body including an acute phase response and release of heat shock proteins. Once compensation is no longer effective, injury to multiple organ systems occurs. This occurs primarily through direct cytotoxicity as well as damage through inflammatory mediators. Multiple organ systems are damaged including the gastrointestinal system, the heart and lungs, coagulation system and central nervous system.

Clinical signs of heat stroke are varied depending on the severity of the disease. It is important to note that the rectal temperature of heat stroke patients may not be elevated due to previous treatment by the owner and decreased rectal perfusion secondary to shock.

There are several common changes seen on CBC and biochemistry with heat stroke. Haematological changes include circulating nucleated RBC and thrombocytopenia, as well as anaemia and a leucocytosis due to stress or inflammation. DIC can occur and is characterised by prolonged PT and PTT, hypofibrinogenemia and thrombocytopenia. Biochemical changes include elevated CK and AST due to muscle damage, elevated ALT and bilirubin secondary to hepatocellular damage, metabolic acidosis and electrolyte abnormalities. Urinalysis may show myoglobinuria, haemoglobinuria, bilirubinuria and casts due to renal tubular damage. Assessment of urine SG will help determine the patient's hydration status and renal function.

Early identification of heat stroke is vital to limit cellular damage and improve the prognosis for the patient.

Reference: Hemmelgarn, C. Compendium 2013.

Which culture is best and how do I transport samples?

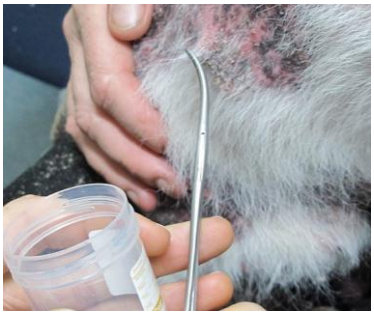
Vetpath has a number of options for bacterial and fungal culture and it can be difficult to know which one is appropriate for your patient.

Three bacterial cultures are available; **aerobic, anaerobic and non-healing wound culture**. Aerobic cultures are performed on samples taken from locations that are exposed to air. Examples include surface skin swabs, ear swabs, tracheal washes and bronchoalveolar lavages. Anaerobic cultures are performed in conjunction with aerobic culture, and are appropriate for internal samples such as joint fluid, tissue biopsies and effusions.

Non-healing wound cultures include aerobic and anaerobic cultures, as well as a Ziehl-Neelsen stain and an extended incubation period to detect acid fast organisms (mainly *Mycobacterium sp).* This culture is used only in certain clinical situations such as with suspected Mycobacterium infection in nodular panniculitis in cats, or fastidious organisms such as *Nocardia sp* and *Actinomyces sp.*

Samples for culture can be submitted in several ways. A swab containing gel media helps to preserve micro-organisms for approximately 3 days during transit to the laboratory. Fluid samples can be transported in either a urine pot or a serum tube (without gel separator). EDTA is bacteriostatic and therefore samples for culture should not be placed into EDTA tubes. Tissue biopsy samples can be placed on a piece of gauze moistened with sterile saline and then placed into a sterile urine pot. This helps to keep the sample moist; however transportation delays should be avoided as the sample is not protected by gel media.

Fungal culture can be performed on the same samples submitted for bacterial culture and no special handling is required. Hair samples plucked from suspected dermatophyte infections can be submitted in a urine pot. These hair samples will be processed with KOH and examined under the microscope for fungal elements and parasites, as well as being cultured on special media for fungal growth.



Snake venom detection test

Summer is snake bite season and you may be considering using the snake venom detection test to help diagnose envenomation.

The test is produced for humans and is designed to be used on a swab of a snake bite. Urine is the preferred sample in veterinary species and care needs to be taken with timing of the test. Urine should be collected 4 – 30 hours post-envenomation in cats and 4 – 40-48 hours in dogs. Collection of urine before or after this window may result in a false negative result.

Season's Greetings and best wishes for the New Year from all at Vetpath.

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