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

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ACTH doses for diagnosis and monitoring HAC

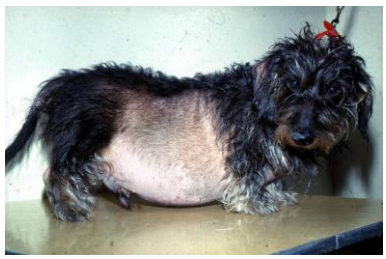
Mitotane and trilostane are the most commonly used drugs for treating spontaneous hyperadrenocorticism (HAC) in dogs. Response to medication is monitored with an ACTH stimulation test in conjunction with clinical response in the patient.

The most common form of ACTH used for stimulation testing is cosyntropin (Synacthen 0.25 mg/250 µg). However, this preparation is very expensive and a weight dependent dosage protocol for diagnosis of hyperadrenocorticism has been established. This protocol is 5 µg/kg IV or IM to a maximum of 250 µg per dog with sampling at 0 and 1 hour.

Healthy dogs are known to have identical adrenal responses to a lower dose of 1 µg/kg of cosyntropin compared to 5 µg/kg and 250 µg/dog. A recent study published in JVIM aimed to determine if the lower dose of 1 µg/kg is sufficient to maximally stimulate adrenocortical cortisol secretion in dogs suspected of having HAC and those dogs being monitoring for treatment with trilostane or mitotane.

The study found that ACTH stimulation test results were not statistically different for the dosages of 1 µg/kg and 5 µg/kg in dogs being treated with trilostane or mitotane. However, in dogs suspected of having HAC, there was a difference in ACTH stimulation test results when the two dosages were used. Clinical interpretation would have been different in 23% of these dogs. The researchers concluded that the higher dose of 5 µg/kg IV is recommended for diagnosing HAC, but the lower dogs of 1 µg/kg IV can be used for dogs being monitored during treatment.

The authors did make a special point of noting that timing of the ACTH stimulated cortisol concentration is crucial. At the higher dose (5 µg/kg), the post-ACTH sample can be collected up to 90 minutes after administration. However, the lower dosage (1 µg/kg) produced a much shorter cortisol peak and the 60 minute sampling time should be strictly adhered to. The authors also noted that the study only assessed IV administration of cosyntropin and therefore IM administration is not recommended at the lower dosages.



Reference: Aldridge C et al. JVIM. 2016; 30:1637-1641.

What is serum protein electrophoresis?

Two primary causes of hyperglobulinemia are antigenic stimulation and lymphoid neoplasia. Serum protein electrophoresis (SPE) can help differentiate between these two processes.

SPE is the process of separating serum proteins into major groups based on their ability to migrate through a medium (agarose gel). The proteins migrate to different degrees due to their unique electrical charge, mass and shape.

SPE is primarily used to differentiate between a monoclonal gammopathy and a polyclonal gammopathy. A monoclonal gammopathy is suggestive of a globulin producing neoplasm such as multiple myeloma. The electrophoretogram will contain a narrow spike in the gamma or beta globulin region (Figure 1). This represents a single type of immunoglobulin being produced by a clone of neoplastic lymphoid cells. A polyclonal gammopathy is represented by a wide based peak in the globulin regions, and is present due to multiple clones of lymphoid cells producing immunoglobulin in response to antigenic stimulation.

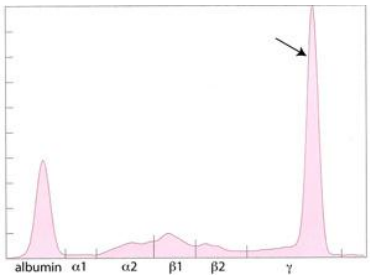


Figure 1: Monoclonal gammopathy in a cat with multiple myeloma.

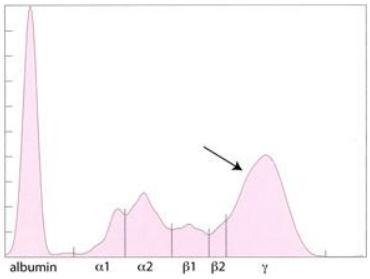


Figure 2: Polyclonal gammopathy in a cat with FIP.

Images: www.eclinpath.com

SPE is performed on a serum sample. Note that haemolysis can interfere with the test. The turnaround time is 3 – 5 working days.

Urine testing at Vetpath

Urine "wet micro"

Wet microscopy involves examination of urine sediment for the presence of cells, crystals, casts and infectious agents by an experienced medical scientist. Urine specific gravity (USG) and pH are also determined. Wet microscopy evaluates the patient for the presence of inflammation, haemorrhage, crystalluria and infectious agents. In most cases wet microscopy is all that is necessary for an accurate diagnosis. Increased numbers of epithelial cells may indicate the need for cytological examination. Stating the collection method on the submission form is very useful for interpretation of the findings.

Urinalysis

Urinalysis includes wet microscopy, USG and the use of a dipstick to measure the pH and the presence of protein, glucose, ketones, blood and bilirubin. The biochemical urine analysis can assist in diagnosing a variety of disorders and provides additional information to help interpret the wet micro.

Urine cytology

Urine cytology involves examination of both Gram and Wright Giemsa stained slides of urine sediment by a pathologist. A urine wet micro is also performed. Epithelial cell morphology is evaluated and is generally only indicated if neoplasia is suspected.

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