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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IGF-1 is now available for cats

Feline acromegaly is caused by a growth hormone (GH) producing pituitary tumour, and is most commonly identified in poorly controlled diabetic patients.

Feline acromegaly has traditionally been considered a rare disease. However, more recent research suggests that acromegaly is more common in diabetic cats than previously thought. One author reported the prevalence of acromegaly in well-controlled diabetic patients to be 10 – 15%, and over 30% in poorly controlled diabetic cats.

GH secretion is episodic, however concentrations in cats with acromegaly are persistently increased. GH has a direct effect on multiple organs, but also causes indirect effects through stimulation of IGF-1 production. GH and IGF-1 have growth promoting effects on bone, soft tissue and cartilage giving affected patients the characteristic physical appearance of larger paws, chin and skull (Figure1). Carbohydrate metabolism and insulin activity are also affected resulting in diabetes mellitus that is often poorly controlled.

Measurement of IGF-1 concentration helps to confirm the diagnosis of acromegaly in humans and cats. IGF-1 reflects the 24 hour secretion of GH, and is a useful test because it is relatively stable after collection, is not species specific, and is constantly secreted throughout the day. Interestingly, IGF-1 concentration may be normal in acromegalic cats if measurement is performed before institution of insulin therapy. IGF-1 is also lower in non-acromegalic diabetic cats before treatment. However, after a few weeks of insulin treatment, IGF-1 concentrations were similar to control patients.

Figure 1: Facial changes in a cat with acromegaly (main picture) compared to 5 years before.

VETPATH has recently created feline reference intervals for the IGF-1 assay at a human laboratory. Feline specific reference intervals allows easier and more accurate interpretation of patient concentrations, and removes the need for a control sample to be submitted. 2ml of whole blood in a red top serum tube is required, and the turn-around time is approximately 5 working days.

Reference: Feldman EC et al. **Canine & Feline Endocrinology**. 4th ed, Elsevier Saunders, 2015.

Measurement of urine protein

Urinalysis is an essential component of the minimum database for patients presenting with urinary disease.

A number of methodologies can be used to detect proteinuria. The most common method is by **urine dipstick**. Protein detection on a dipstick is based on the ability of amino groups in proteins to bind with and alter the colour of acid-base indicators on the dipstick pad. This test is most sensitive to albumin, which has more free amino groups than other proteins such as globulins, haemoglobin and Bence Jones proteins.

The dipstick protein test is not affected by urine turbidity, but can be altered by urine pH, with highly alkaline urine potentially causing false positive protein results. Erythrocytes, WBC and seminal fluid can also increase urine protein concentration.

Proteinuria identified by dipstick analysis is significantly affected by the concentration of the urine sample. The **urine protein:creatinine ratio** (UPC) removes the variable of concentration and helps to clarify whether the amount of urine protein is clinically significant. The UPC also removes the need for a 24 hour urine sample to measure urine excretion; a difficult task in veterinary species.

The UPC is determined by dividing the urine protein concentration by the creatinine concentration to create a unitless number. Less than 0.5 is considered normal, and over 1.0 is abnormal. A UPC between 0.5 and 1.0 is in an equivocal range and warrants monitoring. Most patients with a UPC over 5.0 have primary glomerular disease, however the UPC must be interpreted in light of the wet microscopy results. An inflammatory urine sediment indicates that the proteinuria is likely post-glomerular in origin.

Urine protein electrophoresis can be used to screen for Bence Jones proteins. These proteins are monoclonal globulin proteins or immunoglobulin light chains that form a narrow spike on an electrophoretogram in patients with multiple myeloma. Urine protein electrophoresis is warranted in patients with a serum monoclonal gammopathy.

Urine protein concentration is not affected by storage, and is stable at both room temperature and 4 °C for up to 5 days. Note that refrigeration of urine samples is recommended to help preserve the sediment and prevent bacterial overgrowth during storage.

Happy New Year!

The staff of Vetpath hope you had a lovely Christmas and wish you a happy, safe and prosperous New Year.

NATA

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