Testing for gonadal tissue in cats and dogs

Diagnosis of functional gonadal tissue has historically relied on a combination of clinical signs, resting and functional hormonal assays, vaginal cytology, ultrasound and ultimately surgery. Recent advances in serological testing and the development of assays to detect anti-müllerian hormone can now provide evidence of gonadal status without the need for stimulation testing or the presence of oestrus-like signs.

Veterinarians often need to determine the reproductive status of cats and dogs. This can be required for confirming the complete removal of gonadal tissue after desexing surgery; detection of remnant ovarian tissue in supposedly desexed bitches and queens exhibiting oestrus-like behaviour; detecting cryptorchid or remnant testicular tissue in male animals; and determining reproductive status in adult female cats and dogs with unknown desexing history (for example, stray animals).

The following is a synopsis of the available tests for gonadal tissues in dogs and cats.

ANTI-MÜLLERIAN HORMONE (AMH)

AMH is produced by follicular cells of the sexually mature ovary and by Sertoli cells in intact male dogs and cats.

After complete ovariectomy, levels of AMH decrease significantly. Intact bitches and queens therefore have higher levels of AMH than completely ovariectomised animals. Incompletely ovariectomised animals ("ovarian remnant syndrome") will have higher levels than spayed animals. Therefore a single test in most cases is able to reliably differentiate these animals. It is however important to only test bitches that are sexually mature and when there is any doubt relating to this, testing should be delayed.

In males, AMH levels allow differentiation of intact and cryptorchid from completely desexed animals. Dogs may be tested at any time and do not require gonadotroph stimulation. A single high result indicates the presence of functional testicular tissue. A low result indicates the dog is fully castrated.

ULTRASOUND

Ultrasound to detect ovarian tissue requires an experienced operator, and is more successful in oestrus when follicles are larger. Ultrasound may not detect small ovarian remnants. Likewise in males, ultrasound of the scrotum, inguinal canal and abdomen may detect remnant or cryptorchid tissue, but is less useful in cats due to small gonadal size.

VAGINAL CYTOLOGY

Under the influence of oestradiol at the onset of oestrus, the vaginal epithelium changes from predominantly parabasal cells to almost entirely cornified squamous cells. An oestrus sample should have >80% cornified cells present. Note that vaginal cytology may also detect other syndromes with vaginal discharge that may
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mimic oestrus e.g. stump pyometra, vaginitis, or vaginal neoplasia. Feline vaginal cytology is more subtle than canine and is less sensitive in confirming oestrus. Considerable experience is required to collect a sample that is uncontaminated by cornified vulval cells, and to interpret the cell population present.

**SERUM PROGESTERONE**

Progesterone is produced by a functional corpus luteum. Serum progesterone will rise following ovulation in both the bitch and queen, and remain elevated throughout diestrus (luteal phase). In the queen, ovulation requires mating or manual vaginal stimulation while showing signs of oestrus. Serum should be taken 10 days later for progesterone assay. In the bitch, ovulation may occur during or after signs of behavioural oestrus occur. Therefore measurement of serum progesterone should not be performed until after the signs of oestrus have subsided. These factors limit the timing of the assay, and ideally requires oestrus to be observed or induced (cats). An anoestrus sample will return a low progesterone result, which can be misinterpreted as indicating desexed status.

**SERUM TESTOSTERONE**

In males with functional testicular tissue, testosterone levels may be elevated compared to fully castrated animals. However, testosterone levels fluctuate and low values may lead to a false negative (fully castrated) diagnosis. More accurate results can be gained by stimulating testosterone production using gonadotrophs (hCG or GnRH), which is labour intensive, requires a hospital stay and multiple blood samples.

**PENILE SPINES (CAT)**

In cats, secondary sexual characteristics can assist in determining gonadal status. A presumptive diagnosis of cryptorchidism can be made by demonstrating spines on the penis because their presence reflects the trophic influence of testosterone (spines disappear 4-6 weeks after castration).

**AMH TESTING DETAILS**

Testing details for the serum AMH test can be found in the companion animal section of our new July 2015 price book:

**COST OF TESTING:** $75.86 (excl. GST)

**TURNAROUND TIME:** 1-2 days

**SAMPLE REQUIRED:** Red top (serum)

**REFERENCES:**


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**Case of the month**

**CLINICAL HISTORY:**

A 2 year-old bull presented with skin lesions over entire body. The lesions had been present for over one month, and from a distance they appeared to be warts. One other animal had similar “warts” over one eye, but no other animals in the mob were affected. Differential diagnoses included fungi or dermatophilus.

**GROSS EXAMINATION:**

The submission consisted of a discoid skin crust. This was subsampled for fixation and histopathology, with the remaining fresh sample sent for KOH microscopy and possible culture.

**HISTOLOGY FINDINGS:**

Sections were composed of densely laminated, orthokeratotic to parakeratotic keratin containing interspersed hairs and layers of neutrophils, serum and cell debris. There were multifocal colonies of coccoid bacteria on the surface of keratin crusts. Also, multifocally the keratin contains Gram-positive coccoid bodies forming branching "train-track" filaments.

**KOH PREPARATION:**

No fungal elements seen.

**DIAGNOSIS:**

Answer revealed on page 4.
Senior winter wellness

Does your clinic promote wellness check-ups to your senior clients over the cold, wintry months? Well we’d like to help out by offering discounted testing over the deep dark days of winter. For the months of July and August we are offering:

10% off full Senior Pet Checks & 5% off Senior panels

Plus we can supply to you, free of charge, our senior pet check brochures for your clients’ information. These outline all the reasons our senior friends need extra special attention, plus they have space on the back for you to brand with your clinic stamp or sticker.

During July and August, just use the following special test codes on your submission forms:

**Senior Feline Panel** - $52.10
 Albumin, Globulin, AGR, ALT, ALP, Creatinine, Total protein, T4, Urea
 Use code:  SENCAT5%

**Senior Canine Panel** - $30.82
 Total protein, Albumin, Calcium, Globulin, AGR, ALT, ALP, Creatinine, Urea
 Use code:  SENDOG5%

**Senior Pet Check (Feline)** - $104.61
 Senior Feline Panel + Glucose + CBC + Urinalysis
 Use code:  SPCFEL10%

**Senior Pet Check (Canine)** - $84.45
 Senior Canine Panel + Glucose + CBC + Urinalysis
 Use code:  SPCCAN10%

For more information or to order some Senior Pet Check brochures, just speak to your business development manager or call us on 0800 GRIBBLES.

Get your results instantly with eResults

eResults is our exclusive, free, online results service. Already over 400 vets are using eResults in the paddock or their practice. Shouldn’t you? Call 0800 GRIBBLES to book a demonstration today.

One for the road

In response to feedback from a client, we have successfully put together and trialled a new kit that takes the hassle out of making a blood smear while you’re on-farm, in the car or on a call-out.

Blood cells start degenerating at soon as blood is collected resulting in progressive changes to leukocyte morphology. Changes include loss of segmentation in neutrophil nuclei (resulting in a ‘band’ appearance) and cytoplasmic inclusions resembling toxic change.

With bovine samples, exposure to EDTA often results in spiculing and water artefact in their red cells. These artefacts can make it very difficult to identify other inclusions within the red cells such as *Theileria* sp..

The solution?

On farm or in clinic make us a fresh film when you take the blood sample, it doesn’t have to be perfect. Our new “Roadie” kit makes this easy - it contains everything you need to make a blood smear whilst on the road (glass slides, capillary tubes, slide holders, a spreader slide, a pencil for labelling, some paper towels so you don’t make a mess, plus our very popular ‘How to make a blood film’ instruction sheet).

The kits were flying out the door at the recent NZVA conferences, so don’t miss out, order one today!
Case of the month
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DIAGNOSIS:
Dermatophilosis.
This is a severe example, but images of similarly affected cattle are easily found in the literature.
The reasons for differing severity between animals are not well understood, however it is known
that the two most important factors initiating this disease are skin damage (e.g. due to maceration,
prickly vegetation, arthropods) and moisture. Management with parenteral antibiotics is
usually effective, although cattle with greater than 50% of body involvement can show weight
loss, dehydration and death.
THANKS TO NORTHLAND VETERINARY GROUP, WHANGAREI FOR ALLOWING US TO
SHARE THIS CASE.

Breaking news

- A copy of our new price books (effective 1st July 2015) were posted out to all clinics mid-June, so you
  should have received one by now. This year we have made some notable improvements:
  - Handy booklet format
  - A separate equine price list
  - Consumables price list included
  - Familiar colours
  - Sample handling/ packaging information

If you did not receive a copy or require further copies for your clinic please just call your local laboratory
or order them via our consumables order form.

- Our liver biopsy kit promotion has been so popular we have made it a permanent fixture. You can find the
  kits on our new consumable order form, so they are now easy to order.

- Just a reminder that lungworm are not picked up in a faecal egg count. The eggs hatch in the GI tract and the
  larval stage is found in the faeces. As such, a specific technique is required to detect them. Please tick lungworm
  on your submission form.

Contact us

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