Diagnostic tests for pocket pets and reptiles

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Why perform diagnostic tests on small critters?  
Our veterinary degree has given us the basic skills in diagnosis and treatment that can be translated into any species. By obtaining a diagnosis we can provide the correct treatment first time and give the pet owner a sound prognosis on the course of the disease.

This presentation will focus on some of the more common diagnostic tests that may be performed on pocket pets to highlight conditions that are likely to be seen in general practice. It will focus on what the client sees: the skin and faeces of their pocket pets.

Rats and mice  
These critters often present due to fur loss from intense pruritis. A variety of fur mites may be involved in causing the pruritis. Taking a scalpel blade to a small animal that can shriek is not for the faint hearted. Instead, take a pluck of hair from the affected area and examine it under the microscope for eggs, adult mites. Parasitic skin disease can be treated with selamectin (Revolution, Bayer). For such small patients, an ampule of the kitten size is drawn into a syringe and applied between the ears of the rodent. This is an off label use and as such must be explained to the client.

The hair pluck is also a valuable tool to exclude barbaring – where the dominant animal in the group nibbles off the hair of the submissive one. Barbaring tends to occur around the face and most mite infections involve the hair on the back of the neck as well.

A sticky-tape preparation can also be made to look for parasites.

Guinea pigs  
The parasite, Trixocarus caviae can cause such an intense pruritis that the guinea pig may present because the owner believes it to be seizuring. This parasitic disease can be associated with a heavy crust – which is easily examined under the microscope for the parasite. This step is an ideal way to differentiate between parasitic skin disease and hair loss due to cystic ovaries. Treatment is selamectin and sometimes antibiotics and shampoos for secondary skin infections will be required.

Rabbits  
Rabbits also suffer from a variety of parasitic skin diseases which can be diagnosed in-house with basic skin pluck, skin scrape and sticky tape preparations. The rabbit ear mite, *Psoroptes cuniculi* can produce a heavy crusting on the inside of the ears – often all that the owner will notice initially is that the ears hang down. The parasites and their eggs can be seen in the crusts from the ear. The parasite can live off the host for 3 weeks.
The rabbit fur mite, *Cheyletiella parasitovax* (walking dandruff) may be more easily diagnosed on visual examination of the hair from a hair pluck as this will show the eggs. This parasite can be transferred to humans, dogs and cats. Both conditions can be treated with topical selemectin applied every 3 weeks for 2 – 3 applications or subcutaneous injections of ivermectin.

**Faecal floatation**

Gastrointestinal parasites of rabbits include coccidian and a pinworm (*Passulus* ….). By performing faecal floatation at vaccination and neutering these parasites can be found. Coccidiosis in rabbits is associated with weight loss, diarrhea and death in some individuals. Treatment with Baycox (Bayer) can be given at 20mg/kg by mouth once.

**Venous access in rabbits**

Two easy sites to access the veins in rabbits include:

1. **Marginal ear vein.** Avoid this in small breeds with small ears, but it is suitable for larger rabbits. Sedation is recommended prior to sampling. Shave the hair over the ear. Hold the vein up and use a small gauge needle. By withdrawing slowly into a small syringe, some of the disadvantages of using the small gauge needle can be overcome.

2. **Lateral saphenous vein** courses diagonally across the lateral aspect of the tibia. Sedation is advisable to prevent the rabbit from kicking during the procedure.

3. Other suitable veins include the **jugular vein.** However, this can be difficult to find on fat and female rabbits due to the size of the dewlap.

**Ferrets**

The most spectacular skin disease in the ferret is sarcoptic mange. Unlike dogs, the mite is easily found in the crusts seen on the feet and tail. It resolves with selemectin given topically monthly. Secondary antibiotics may be required.

Blood collection in the ferret requires a quick mask down with isofluorane (or sevofluorane) and 02. This reduces the risk of stress on the ferret and bite marks on the handler!

Two sites to access veins in ferrets include:

1. **Anterior vena cava** is commonly used. The ferret lies on its back with the head and neck extended. A 25G needle is inserted into the thoracic cavity between the first rib and manubrium at an angle of 45 degrees to the body. Aim the needle for the opposite rear leg. Insert the needle to the hub and apply suction to the syringe as the needle is slowly withdrawn until blood fills the syringe.

2. **The lateral saphenous vein** can be used for smaller amounts of blood. It sits above the hock on the lateral aspect of the tibia.
Birds

Obtaining a crop sample

**Equipment**
- Crop needle for a cockatiel - 12 Gauge
- Crop needle for a budgie - 16 Gauge

**Method**
- Restrain the bird in your left hand (for right-handed people).
- Wrap the wings and legs in a towel.
- Restrain the head using the pistol grip. The left thumb stretches and extends the neck so that it is straight. The thumb now runs the length of the oesophagus and the crop needle will be felt running under the thumb as it passes into the crop.
- The crop needle is introduced to the left side of the mouth and angled to the right side of the mouth. By aiming to run the needle down one side of the throat, the windpipe opening is avoided.
- If you intubate the windpipe the bird will become very distressed: flutter and vocalise. It will feel tighter and bumps of the tracheal rings may be felt. Remove the needle and start again.
- To check you are in the correct place, you can blow the feathers away and see the needle in the crop through the thin skin. It should be readily felt under the thumb.
- Then feel for 2 tubes under the chin: one is the trachea, one is the crop needle.
- Inject the fluid slowly. Then aspirate the fluid back up into the syringe.
- Withdraw the crop needle slowly.
- Inject the contents of the syringe onto a slide through the crop needle.

Performing a wet mount

- **Looking for motile organisms:**
  - Trichomonads – in crop sample - budgies
  - Giardia – in faeces - cockateils
  - Spironucleosis in faeces - king parrots

- **Indications:**
  - Regurgitation
  - Diarrhoea
  - Weight loss

Performing a gram stain

**Purpose:**
Gram stains are used to stain bacteria in faeces, crop, aspirates or body fluids. Cells do not take up the stain well – there is loss of nuclear detail.
- Gram positive organisms stain blue
- Gram positive organisms stain red.
Fortunately, most birds will produce a dropping after handling.

- **Indications:**
  - Diarrhoea
  - Vomiting
  - Part of routine health screen – establishes normals
**Equipment**

Reagents:
- Crystal violet – primary stain
- Iodine
- Acetone – decolouriser
- Safranin – counterstain.

**Procedure:**
1. It may be necessary to heat fix the slide by blow-drying it for 10 – 30 seconds
2. Place the slide on a rack or sink
3. Flood the entire slide with crystal violet solution. Leave for 30 seconds
4. Wash the slide in tap water to remove the crystal violet solution
5. Flood the entire slide with iodine. Leave for 30 seconds
6. Wash the slide in tap water to remove the iodine solution
7. Add the decoloriser one drop at a time until the colour is no longer present. It is easy to decolourise too much.
8. Wash the slide with tap water
9. Flood the entire slide with safranin. Leave for 30 seconds
10. Wash the slide in tap water
11. Allow to dry by resting upright on an angle on paper on the metal sink or blow dry.

**Precautions**

Wear gloves while performing a gram stain.

Flammable. Keep away from heat, sparks and open flame.
Vapour is harmful and causes irritation. Do not breathe in vapour. Use with adequate ventilation.
Wash hands after handling.

**Interpreting the gram stain**

The gram stain has been used in seed or pellet-eating parrots, pigeons and canary/finches to attempt to describe alterations in normal flora of the gut. This is not a valid test in meat-eating birds. The aim is to look for trends, rather than to think that this is a highly accurate diagnostic test.

The gram stain is described in terms of:

1. The concentration of bacteria from 1+ (few) to 4+ (many). It is normal for canaries to have 1+ and cockateils and galahs would have about 3+. A concentration of 0 is seen in heavy metal poisoning.
2. The population of bacteria present expressed as a percentage. A normal gram stain may have 50% Gram positive rods, 40% gram positive cocci and 10% gram negative rods. Diarrhoea is seen when the gram negative rods increase to more than 30% of the population.
3. The presence of round budding yeasts and fungal hyphae is also noted as particularly hand-reared birds can acquire *Candida albicans* from humans. Avian gastric yeast (Macrorhabdus ornithogaster) may be seen in the faeces of thin cockateils and other species. Occasionally bread yeasts are seen in the faeces of birds fed bread.
Venous access in birds

It is easier to take blood from a bird that has been anaesthetised. There is less struggling, and thus haematoma formation is less likely. Conscious blood collection can be done with experience.

A choice of three large veins is made:

1. **Jugular vein.** This sits in the featherless tract that runs down the right side of the bird from the chin to the top of the shoulder. This is an ideal vein in parrots and passerines. The vein is very superficial and will be able to be seen.

2. **Brachial vein.** This small, mobile vein travels over the antebrachium at the elbow joint. This vein is suitable for pigeons, chickens and raptors.

3. **Medial metatarsal vein.** This vein runs up the featherless area of the lower leg. The vein sits in a shallow position but a 60 degree angle is needed to puncture the scales.

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**Reptiles**

Fortunately, with scales, the parasites of the skin are easily seen. Check for ticks inside the ears of wild blue tongue lizards. Snake mite likes to hide in the heat pits of pythons and under the chin in snakes and lizards.

Examination of the faeces by faecal floatation

This is a common test done to determine the presence of gastrointestinal parasites. Bearded dragons commonly have pinworm, which does not appear to be pathogenic unless the burden is high. However, coccidia in this species is associated with ill thrift and diarrhea. Snakes may also carry worm burdens. Occasionally, worm eggs from the food items (rodents) will also be seen in the faeces.

**Diagnosing cryptosporidium**

This parasite may cause diarrhea or persist in the reptile subclinically. *Cryptosporidium parvum* is zoonotic.

- In lizards, this may be done by using a cloacal swab. A moistened swab is inserted into the cloaca.
- In snakes, it is more likely to be diagnostic if a gastric lavage is performed three days after feeding.

Cryptosporidium can be difficult to diagnose in-house, and submission to a laboratory is recommended.

**Diagnosing the presence of motile flagellates**

Snakes can suffer from amoebic gut infections that result in abdominal masses, failure to eat and cloacal straining. A moistened swab is inserted into the cloaca and then wiped onto a slide and examined immediately under the microscope as a wet mount.

**Venous access in reptiles**

The optimal site varies with the type of reptile

1. Lizards and snakes: the ventral coccygeal vein can be used. The needle is inserted about half way down the tail from the cloaca. The needle is inserted at a steep angle on the
midline until it hits the spine and is then walked down between the vertebra while gentle suction is applied to the syringe.

2. Long neck turtles have an easily visible jugular vein and the junction of the dorsal grey skin colour and ventral cream skin colour. The vein is shallow but the skin is tough.

3. Short-neck turtles present a real challenge. Subcarapacial venous plexus can sometimes be accessed.

References


- UEP annual conference proceedings contain a wealth of information on pocket pets.

- Association of Avian veterinarians, Australasian committee run an annual conference each year. Website: www.aavac.com.au