



VetArtis – what I do:

- Advanced medicine – I am an RCVS Advanced Practitioner in medicine
- High-quality ultrasound scans with over 10 years' experience and a high-end machine
- Ultrasound-guided sampling such as biopsies and fluid drainage – equipment carried
- Case discussions to help you work through the case and plan treatment
- Practical CPD on ultrasonography

VetArtis (that's me, Sarah Keir) provides **peripatetic advanced medicine and ultrasound services** for small animal practices in Hertfordshire and Buckinghamshire. I set up this service to help vets in first opinion practice – **to help YOU!** Perhaps you have a difficult medicine case and are not sure what to do next? Or you know the pet needs an ultrasound scan but your practice machine is not great, or you are not sure how to interpret what you see?

VetArtis services are complementary to referral by providing a **middle level between general practice and full referral to a Specialist** in a referral hospital. Referral centres generally don't offer out-patient imaging services so when a case is referred it is lost in its entirety. There is a growing need for an affordable middle level of services as economics mean that full referral will become increasingly out of the reach of many pet owners.

My advanced medicine knowledge is key to interpreting the ultrasound images and biopsy/sample results in a clinically relevant way - you don't just get images, **you get understanding with a clinical interpretation** with each ultrasound performed. This multi-discipline approach allows me to work with you to move the

case forward with diagnostics and treatment options and to give more information to clients.

In which cases is ultrasonography useful?

Every medicine case needs an ultrasound examination at some point! Ultrasound can provide a lot of information without resorting to expensive CT or invasive exploratory surgery. Not only is it extremely useful as a diagnostic tool and an extension of the clinical examination, especially if you know something is not right but are not sure what, it also allows collection of targeted samples to aid the definitive diagnosis and treatment plan. And of course, ultrasound is essential in assessing cardiac and pericardial disease.

How does it work?

Easy! You just book me when you need me, through the website. I come to you in your practice, so your clients don't need to travel. You get a summary and discussion right there and then and a detailed written report usually the next day.

To find out more about VetArtis services or sign up to receive future digital newsletters, please visit the website www.VetArtis.co.uk

Cases in which ultrasound exams are particularly useful:



- Unexplained weight loss or inappetence
- Suspected neoplasia e.g. abnormality on abdominal palpation
- Neoplasia staging
- Workups e.g. jaundice, hypercalcaemia, pyrexia of unknown origin, immune-mediated disease, PUPD, ascites, Cushing's Syndrome
- Renal disease e.g. azotaemia work-up
- Urinary tract disease e.g. investigation of incontinence or recurrent UTIs
- Gastrointestinal disease e.g. work up of chronic vomiting/diarrhoea, acute obstructions, suspected pancreatitis
- Liver and biliary disease – acute or chronic

And much more!



The Yellow Cat

When a jaundiced cat is first examined, the jaundice can be obvious and impressive (sometimes even before you've got the cat out of the basket!) but like finding anaemia, jaundice is not the diagnosis but the start of a diagnostic challenge. To show you how ultrasound and some additional medicine knowledge made a difference working-up a case of jaundice in a cat, let's take a look at Bella.

Bella is a 5-year-old DSH cat who presented with a weeks history of inappetence and being subdued. She had lost a lot of weight and was in poor body condition (3/9 BCS), very dehydrated and jaundiced. Abdominal palpation was unremarkable, with a rectal temperature of 36.6°C. Bella was admitted for intravenous fluid therapy, analgesia with buprenorphine and bloods were run; her total bilirubin was 150µmol/L. Her liver enzymes were normal apart from a mild increase in GGT, mild hyperglycaemia, with no anaemia apparent on haematology and an increase in monocytes/neutrophils. She was started on potentiated amoxicillin and the fluids and buprenorphine were continued. Over the next couple of days, she was a little brighter and ate a little food.

As Bella was not improving, VetArtis was called in to help. The first thing I did was to re-examine Bella and re-run the bloods - she was still very yellow though also pink so I deduced that RBC destruction would be unlikely as a cause of her jaundice. Her rectal temperature was 39°C. Blood tests showed the globulins had increased to 48 g/L, potassium had fallen to 3.3 mmol/L, liver ALT and ALKP mildly raised to about 100, bilirubin 120, no anaemia and WBC normal distribution and number. These confirmed that RBC destruction was not the cause of Bella's anaemia and that her liver was unhappy, but not whether the cause was hepatic or post-hepatic. I was also suspicious of infection as the globulins were raised and now Bella was rehydrated, her rectal temperature was a little raised. The hypokalaemia, caused by inappetence and IVFT, would need to be corrected too.

I performed an abdominal ultrasound scan which showed a liver of normal size and shape but with multiple hyperechoic patches throughout. The gall bladder wall was slightly thickened, hyperechoic and irregular, but there was no evidence of obstruction, stones or mass lesions. Her pancreas was moderately hyperechoic and there was mild peritoneal reaction around it but no free fluid. The scan revealed that extrahepatic biliary obstruction was not the cause of Bella's jaundice. At this stage I thought the most likely cause of Bella's signs was bacterial cholangitis/cholangiohepatitis, accompanied by a degree of pancreatitis, though neoplasia such as a lymphoma or could not be ruled out (or early FIP, or hepatic lipidosis). After

discussing with the case vet, the owner opted to have fine needle aspirates of the liver taken to rule in/out lymphoma and ultrasound-guided bile acid aspiration to guide the antibiotic choice.

Additional tests and treatments:

- IVFT was supplemented with potassium and daily testing was commenced to check levels.
- Blood was sent externally to test folate and cobalamin levels and feline pancreatic lipase.
- An oesophageal feeding tube was discussed but declined so Bella was given mirtazapine orally (the transdermal 'Miritaz' was not available at the time of this case) and maropitant for suspected nausea.
- Potentiated amoxicillin was continued and pradofloxacin was started pending bile culture.
- Ursodeoxycholic acid (UDCA) was initiated.

After a couple of days Bella's appetite and demeanour markedly improved so she was discharged pending results, continuing the medication above apart from the IVFT.



The results of the liver FNA were highly suggestive of neutrophilic cholangitis due to the large number of neutrophils found; the results excluded lymphoma or hepatic lipidosis. The cobalamin and folate levels were normal as was the fPL. Diagnosing pancreatitis is a matter of increasing suspicion so I was still suspicious of pancreatitis as part of the issue. *E.coli* was cultured from the bile sample and the pradofloxacin was continued for 4 weeks. At this point the practice reported back to me that Bella had gained weight and was seeming well so a plan for ongoing monitoring was made.

Discussion

Jaundice is categorised by location of the cause into prehepatic, hepatic and post hepatic. In cats it is common to find concurrent disease processes, as in Bella who had two of the three parts of "triaditis syndrome", and the key to an efficient diagnostic workup is to work out which is the most significant for that patient. In dogs, the majority of hepatic disease affects the liver parenchyma but in cats the biliary system is most commonly affected as seen in cholangitis. Therefore sampling bile is very useful for feline cases.

Core-biopsies are much better for diagnosis than FNAs of liver as they preserve the architecture which is essential to differentiate acute from chronic; the latter has a much poorer prognosis. The liver can often appear normal on ultrasound in diffuse liver disease, so samples are frequently recommended if there is enough suspicion. VetArtis carries the necessary equipment to perform core biopsies, FNAs and bile sampling.