



FROM THE DIRECTOR:

RABIES TESTING POLICY

The Arizona Department of Health Services (ADHS) closed their Tucson branch laboratory March 13, 2009 due to budget cuts. Direct fluorescent antibody testing for rabies is no longer available locally in southern Arizona. Rabies tests will have to be shipped to the Phoenix ADHS lab.

Effective March 14, 2009 the Arizona Veterinary Diagnostic Laboratory instituted a change in policy regarding rabies testing for our clients. We will no longer be offering brain extraction and transportation of the brain tissue to the ADHS lab free of charge.

For heads submitted for rabies testing only we will charge a fee of \$45 to cover the cost of brain extraction, disposables, incineration and shipping charges.

We recommend that heads be removed from livestock carcasses before submission. If the entire cadaver is received we will charge an additional \$0.50/lb of body weight for disposal of the cadaver. This charge is subject to change without notice depending on natural gas and labor costs and I recommend you contact the laboratory for firm pricing before submitting an entire large animal carcass.

Direct submission of heads of small animals to the ADHS is permitted. However, submission of dogs and cats without neurologic signs that have bitten a person, instead of undergoing a 10-day quarantine, is being strongly discouraged by the ADHS. Extraction of brains of large livestock (e.g. adult horses and cattle) is required prior to submittal to the ADHS laboratory in Phoenix. For further information from the Arizona Department of Health Services, please call 602-364-4562 or visit the following website: www.azdhs.gov/phs/oids/vector/rabies. The ADHS lab does not charge for the test.

If the animal is submitted for full necropsy with a request for rabies testing or if rabies testing on a necropsy is deemed necessary by the diagnostician because the animal was exhibiting neurological signs, we will add \$20 to the cost of the necropsy to cover shipping charges.

We regret that we cannot continue to offer brain removal and transportation of the sample to the rabies lab free of charge but continuing cuts to our budget and the closure of the local rabies lab make this change necessary.

FEATURED ARTICLE:**ANTIBIOTIC SENSITIVITY TEST (AST) REPORTING**

There are two types of results provided by in vitro susceptibility tests: qualitative results, i.e. susceptible, intermediate or resistant, and quantitative results, i.e. the minimum concentration of an antibacterial required to inhibit the growth of bacteria.

We have incorporated a BioMic V3 system in our Bacteriology Lab. This is the latest version of a digital image analysis system that has greatly enhanced the capabilities of the disk diffusion antibiotic sensitivity testing (AST), the classic and most widely used AST system in veterinary laboratories because of low cost, flexibility and accuracy.

It is a semiautomated data management system utilized to read, interpret and report antimicrobial disk diffusion test results.

It consists of a cabinet with a video camera for video-assisted plate reading with an image capture card and specialized, continuously updated software. The agar plates are placed in the reader and a clear, magnified image appears in the screen. The bacterial growth inhibition zone is calculated by digital image analysis and interpreted using CLSI (Clinical and Laboratory Standards Institute) guidelines as susceptible (S), intermediate (I) or resistant (R) organisms to each antimicrobial used in the test. The results are then reported as such, and also as Minimum Inhibitory Concentration (MIC) equivalent quantitative values derived from regression analysis of data generated by dilution systems. This automated zone reader greatly reduces the technician variability in reading plates and errors in transcription of results. Its "expert" software significantly increases the quality control of the testing by filtering the results according to accumulated data and set recognition patterns. It allows the reporting of the qualitative results (disk diffusion) that are important to treatment, and it also provides descriptive quantitative information (derived MIC results) that some veterinarians desire, increasing the clinical value of the data while maintaining the low cost and potential use of many more antimicrobials inherent to the disk diffusion tests.

The system is now being interfaced with our laboratory information management system for efficient data handling and reporting. The results will be automatically incorporated in the case report, and expressed as disk diffusion results (S, I or R), and the derived MIC values (mcg/ml).

WEB CLIENT SERVICE NOW AVAILABLE

We now have web client service available to provide internet access to laboratory results as they become available. If you are interested in having access to this service please e-mail the lab at azvdl@ag.arizona.edu to request a user name and password. Our staff will e-mail you back with your user name, password, the link and user instructions for the web client. Please try our new system at AzVDL main website <http://www.microvet.arizona.edu/AzVDL/index.shtml> and click AzVDL Web Client or go directly to the WebClient website at <https://vadds.microvet.arizona.edu/VaddsWeb>.

DIAGNOSTIC UPDATE:

SMALL RUMINANTS

We received a 2.5 year-old alpaca with a history of sudden death. Necropsy findings included fibrinous pericarditis and multiple 4-5mm white nodules scattered in the liver and the spleen. There were also microabscesses scattered through the parenchyma of the lung. There was a white nodule in the myocardium of the left ventricle of the heart. *E. coli* was isolated from liver and lung. It is thought that a disseminated bacterial infection is responsible for this animal's death.

Tetanus was diagnosed in a 6 week-old lamb that was the third lamb to die with extreme tetanic rigidity of the legs accompanied by opisthotonus. The differential diagnosis included clostridial enterotoxemia and white muscle disease. Enteric cultures were negative for *Clostridium sp.* and no lesions were identified in heart or skeletal muscle. The diagnosis of tetanus is generally based on clinical observation and lack of evidence of other conditions that could have similar clinical signs. In this case, there was evidence of banding for tail docking prior to the onset of the disease.

AVIAN

A two year-old chicken had a history of "wheezing" prior to death. The bird was in good body condition but multiple inflammatory lesions were identified in the airways, the spleen, the proventriculus and the liver. *Pasteurella sp.* were isolated from multiple tissues. This bird was in overall good condition and the source of the *Pasteurella* infection was not identified.

Aspergillus niger was isolated from the lungs of a 12 year-old cockatoo. The bird had a history of decreased appetite and activity for a week. There were 3-4mm nodules scattered throughout the lungs. These were found on histopathology to be large granulomas with infiltration of inflammatory cells and numerous fungal hyphae.

A 14 week-old cockatoo has been hand-fed and is reported to have had difficulty breathing after being fed. The abdomen was grossly distended and there was extensive abdominal fat present. The very large liver had rounded edges and was quite pale and friable. Histopathology resulted in the diagnosis of severe **hepatic lipidosis**.

Megabacteria were numerous in the ventriculus of a 10 year-old macaw that had become thin and emaciated. Other

findings included blood pigment in the lumen of the small intestine. Megabacteria are identified fairly frequently in birds and are considered to be a significant pathogen in many cases.

BOVINE

A yearling heifer was found dead after she was seen appearing normal the previous day. The animals were on pasture with some supplemental feed. **Bloat** was diagnosed based on the severe rumen distention with gas with an associated very distended abdomen. Bloat diagnosis is often difficult because the severe distention can occur post-mortem as well as antemortem. In this case the animal was very well preserved and it is felt that bloat was the cause of death. This heifer had edema in the fascial layers between muscles of the rear legs which some feel is a characteristic of bloat. That lesion can also be seen in occasional animals that die of other causes but is most consistently seen in bloated animals. Additional evidence that was used in the diagnosis is a lack of evidence of any other significant disease and negative tests for nitrate conducted on ocular fluid.

DIAGNOSTIC UPDATE:

FELINE

A 9-year-old female Siamese feline was euthanized because of a history of worsening ataxia, nystagmus and blindness over a two week period. The lesions found at necropsy consisted of severe histologic **spongiosis and myelin vacuolation of the white matter of the CNS**. The changes were evident throughout the white matter of the brain stem and cerebrum. There were hypertrophic fibrous astrocytes, but no other inflammatory or degenerative changes were observed. In the absence of any evidence of familial spongiform myelin disorders, of hepatic encephalopathy or of other metabolic disease, an acute toxicity was suspected. A strictly indoor cat, there was no history of exposure to the more common neurotoxins such as bromethalin, hexachlorophene, drugs, toxic plants, etc. But since the animal had a history of chewing on electrical wiring, chargers, headphones and similar equipment, a possible exposure to highly neurotoxic organotin compounds such as triethyltin was considered. Among other uses in the chemical industry, organotins are commonly used as stabilizers in polyvinyl chloride, and catalysts in the production of polyurethane foams and silicone rubber. No tests for organotins were available, but the level of tin in the liver was 0.24 ppm, almost five times the level of tin in the liver of normal, control cats (0.05 ppm). Other metals in a heavy metal screen were at comparable levels in the livers of this cat and of control cats. Although a non-diagnostic observation in the absence of established reference values and of metabolism and clearance data for tin in cats, the possibility of organotin neurotoxicity in this case has not been ruled out.

Findings in a 15 year-old mixed breed cat with a history of lethargy, weight loss, hyperthyroidism, diarrhea, vomiting and weakness included a 2.7cm long and 1.0cm diameter right **thyroid adenoma** and evidence of **cardiomyopathy** with myocardial fibrosis. The pericardial sac contained 10cc of fluid. Thyroid adenomas are not uncommon in cats. Cardiomyopathy in cats has been associated with thyroid adenomas if they are functional.

Severe pyogranulomatous peritonitis with ***Fusobacterium sp.*** present was associated with anorexia and icterus in an 8 year-old cat. Lesions in the abdomen involved the serosa of the intestines and extensive involvement of the omentum with thickening due to infiltration of inflammatory cells including neutrophils.

A 15 year-old domestic short hair cat from Tucson had a clinical history of swelling under and over both eyes unresponsive to antibiotics. On ophthalmological examination, the cat had bilateral retinal detachment. The cytology from the periorbital swelling was consistent with pyogranulomatous inflammation with several scattered large spherules consistent with *Coccidioides* spp. (coccidioidomycosis). This soil-borne fungus is common in the southwestern United States and can infect many species. The dog is the most common species reported in the literature. The diagnosis of feline coccidioidomycosis is increasing due to increased awareness in Arizona veterinarians. The location of the lesion in this cat is an uncommon presentation.

Tissues affected with **lymphosarcoma** in an 11 year-old cat with chronic sinusitis, weight loss and cough included involvement of liver and intestine. There was also evidence of sepsis with *Pasteurella multocida* isolated from lung and liver. An interesting secondary lesion also included some necrosis in the liver. Additional findings included *Pseudomonas aeruginosa* isolated from chronic exudative rhinitis. One might speculate that the lymphosarcoma resulted in some immunosuppression allowing the other infectious processes to develop.

CANINE

A 3 year-old, stray Pit Bull from Kansas had a clinical history of emaciation and alopecia when it was found. Severe regenerative anemia, hyperglobulinemia and hypoalbuminemia were identified at the time of spay. Ultrasound of the abdomen showed splenomegaly and mesenteric and sublumbar lymphadenopathy. The diagnosis by bloodfilm evaluation was markedly regenerative anemia, thrombocytosis, mild leukocytosis (neutrophilia and monocytosis) with intraerythrocytic piroplasm organisms consistent with *Babesia gibsoni*. The organism was confirmed by PCR at North Carolina State University Tick Borne Disease Laboratory. This tickborne disease is commonly found in the Pit bull breed. The disease can be transmitted by ticks or fighting dogs that are positive for *Babesia gibsoni*.

A 2 year-old male Basset Hound from Kansas, had a clinical history of peripheral lymphadenopathy, mild fever, and enlarged spleen. The cytological diagnosis was granulomatous splenitis and lymphadenitis with intrahistiocytic negative staining bacteria consistent with *Mycobacteria* spp. based on positive acid-fast staining. *Mycobacterium avium* is the most common isolate in disseminated mycobacterial disease in the dog.

DIAGNOSTIC UPDATE:

A pit bull that had been impounded had a long history of bloating. The cause of the bloating was identified as **multiple adhesions** involving and limiting movement of the mid jejunum. One of the loops was adhered to the pancreas. The source of the extensive adhesions was not identified. Small penetrating foreign body wounds are often suspected.

A Great Dane was submitted after a history of febrile illness for approximately two days. *Pseudomonas* sp. were isolated from liver and lung suggesting **sepsis** which was supported by diffuse interstitial inflammatory lesions in the lung. The animal had previously suffered an injury over the right stifle which had been sutured. However, there was extensive exudate in the soft tissues associated with the injury. It is thought that the disseminated sepsis may have originated from the wound.

A one year-old beagle died quite suddenly. The significant findings at necropsy included hemorrhagic enteritis in a portion of the small intestine with heavy populations of *Clostridium perfringens* present. No other significant lesions were identified. The **clostridial enteritis** could not be confirmed as the cause of the sudden death. Clostridial enteritis is not frequent in dogs but occasionally there are situations where *Clostridium perfringens* undergoes excessive proliferation and ensuing systemic illness can evolve.

Diffuse interstitial pneumonia was identified in a 6 week-old Rottweiler puppy. Multiple *E. coli* were isolated from liver and lung. It is felt that the pneumonic lesions were hematogenous in origin and associated with a **septic condition**. Tests for canine distemper were negative.

WILDLIFE

A wild raccoon had a history of incoordination and unusual behavior. Tests for rabies were negative. Mild nonsuppurative encephalitis was associated with PCR tests positive for **canine distemper** virus. A secondary finding included extensive bacterial pericarditis with *Staphylococcus aureus* isolated. Raccoons are known to be highly susceptible to canine distemper virus.

Arizona Veterinary Diagnostic Laboratory

Access to the AzVDL: Take Tucson Interstate 10 to the Miracle Mile exit #255. Travel approximately 1/4 mile on the south bound frontage road between Miracle Mile and Grant Rd. Turn west onto the farm at the signed entrance.

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Diagnostic Services offered at AzVDL:

Pathology: gross necropsy, histopathology, cytology, immunohistochemistry, and related diagnostic tools used to determine the cause of disease

Microbiology: the use of microbiological techniques to identify bacteria, parasites, and other infectious agents, and their relationships to animal diseases

Serology: analysis of serum to monitor animals' prior exposure to diseases

Molecular Diagnostics: PCR testing for common diseases of animals

This newsletter can be accessed electronically via <http://microvet.arizona.edu/AzVDL/newsletters.html>
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