



Newsletter

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From the Director:

Bioterrorism

Bioterrorism is on many people's minds. There are two possibilities that might involve the AzVDL. The first is the possibility of intentional or accidental infection of livestock with diseases such as Foot and Mouth Disease, Classical Swine Fever or African Swine Fever. In the event of any suspicion of this type of disease, the only appropriate action to take is to inform the state veterinarian. The USDA does not allow state laboratories to perform diagnostic procedures for these diseases, a fact which greatly limits surveillance and may increase response time. We are happy to consult on any animal health problems of unknown cause.

The second possibility is the introduction of agents directed primarily at human populations. These carry the possibility of also affecting pets or livestock. Anthrax is the most talked about agent. Many state diagnostic laboratories investigate natural cases of anthrax in livestock and we are capable of doing so, but there has never been a known case of anthrax in Arizona. There are other agents that could be directed at humans but which could also infect animals such as pets. We are able to help with diagnosis of agents such as *Yersinia pestis* (plague), or *Francisella tularensis* (tularemia). These are both endemic, at least in part of Arizona. Call us if you have questions about bioterrorism agents. We work closely with the Arizona Department of Health Services, which has been very active in developing procedures for diagnosis and management of disease outbreaks in humans.

Robert D. Glock, DVM, PhD

Feature Articles:

Canine Valley Fever Study - Update and Call for Participation

The Canine Valley Fever study, sponsored by the California Health Care Foundation, California State University, Bakersfield Foundation, the Valley Fever Center for Excellence, and the Arizona Veterinary Diagnostic Laboratory, is a prospective epidemiologic study designed to evaluate how many dogs in the endemic area are exposed to the fungus, *Coccidioides immitis*. Exposure can result in asymptomatic infection or the clinical disease, Valley Fever. The study is designed to determine the rate of exposure, to determine the incidence of disease, and attempt to correlate risks with breed, gender, or environment.

The study began in Tucson in April 2001 with the goal of enrolling 200 4-6 month old puppies. By September 2001, we expanded the study into Phoenix to try to enroll another 200 puppies. Puppies were blood tested to make sure they were healthy and negative for Valley Fever by serology. Puppies with abnormalities or positive cocci tests were not included. Enrolled puppies will be tested again at 6 and 12 months post-enrollment. Puppies in the study get free blood and serology testing if they develop symptoms that may be Valley Fever at any time during their enrollment period.

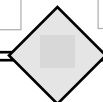
Early enthusiasm led to a burst of enrollments in Tucson in May and early June, followed by a summer "drought".

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Important Telephone Numbers:

After hours assistance	520-349-5534
AzVDL cell phone	520-349-6361



Enrollments began trickling in as fall approached. The response in Phoenix, however, has been minimal. In case veterinarian enthusiasm has waned or you don't know we are still in need of puppies, the study still lacks about 340 dogs after 8 months.

The Canine Valley Fever study proposes to learn more about the disease in dogs and aid in bringing to market a vaccine against it. The study requires the support of the veterinary community and we sincerely hope that others will come forward to contribute by referring puppies, and that those who are already participating realize we are still in dire need of puppies for enrollment. For those referring puppies, our sincerest thanks. Keep up the good work and we will keep you updated on results.

Our early data from the first 6 months are very exciting. We have enrolled 63 dogs since April — 5 in Phoenix, 58 in Tucson. Four dogs were ineligible initially because they were already positive (2 IgM +, 2 IgG +); all were asymptomatic. Of 11 dogs presented for routine 6-month testing, 3 have been asymptomatic with positive IgG antibody tests (1:4). Five dogs were presented to their primary veterinarians for possible Valley Fever (2 coughing, 3 lame). Two tested positive for IgG antibodies. One dog was ill, with fever, weight loss, anorexia, monocytosis, hyperglobulinemia, and radiographic abnormalities of the chest. The IgG titer was 1:8. For study purposes, the other dog was considered an asymptomatic exposure, with a 1:4 IgG titer, low-grade lameness unresponsive to empirical treatment with antifungal medication, and no radiographic abnormalities. It is too early to interpret these data, or to know if currently asymptomatic dogs with low titers will develop clinical disease within the next months, but we see that dogs are exposed early to this fungus.

In spite of the evidence for asymptomatic exposure, clinical Valley Fever in the dog is one of the most prevalent infectious diseases in southern Arizona. It costs owners much in grief and money. Prevention of Valley Fever in the dog would be an incredible boon. The Canine Valley Fever study is being performed not only to learn more about the disease in dogs but to design and determine the size of a clinical vaccine trial. Our supporters have been funding vaccine development research with the goal of having a vaccine ready for clinical trials in 3-5 more years. The group has a great deal of interest in 1) testing this vaccine in dogs as a model for natural exposure in humans, and 2) licensing the vaccine for veterinary use in dogs.

To learn more about the study and how you can participate, contact Dr. Lisa Shubitz, 520-626-8198, or Dr. Christine

Butkiewicz, 520-626-1165. If you are a participant and need more packets, study information, clarification on anything, brochures for your clinic, or someone to discuss the study with your hospital personnel, please call us and let us see how we can help you.

Sharon M. Dial, DVM, PhD

Update on Psittacosis

The National Association of State Public Health Veterinarians has recently released the 2002 update of the *Compendium of Measures to Control Chlamydia psittaci (formerly Chlamydia psittaci) Infection Among Humans (Psittacosis) and Pet Birds, 2002*. The complete text of the Compendium can be accessed at the American Veterinary Medical Association web site at www.avma.org. Browsing the Resources tab or searching for Psittacosis Compendium can find it.

The Compendium focuses on the transmission, diagnosis and treatment of *C. psittaci* infection in humans (Psittacosis) and birds (Avian Chlamydiosis). Its recommendations for the diagnosis, control and treatment of avian chlamydiosis are detailed guidelines particularly useful for the testing and the selection of specific treatment regimes in birds, including a list of commercial sources of medications.

The 2002 update incorporates the new taxonomic classification of the chlamydiae based on extensive phylogenetic analysis of rRNA genes, proposed by scientists of the National Animal Disease Center at the University of California at Irvine. The new classification recognizes two different genera within the family *Chlamydiaceae*: *Chlamydia* and *Chlamydophila*. The genus *Chlamydia* includes *C. trachomatis*, *C. muridarum*, and *C. suis*. The bulk of the animal pathogens are included in the genus *Chlamydophila*, with *C. psittaci*, *C. pecorum*, *C. abortus*, *C. felis* and *C. caviae*; *C. pneumoniae* (a human pathogen) is also included in this genus.

The Compendium recommendations are focused in the new species, *Chlamydophila psittaci*, which includes all the avian strains (and a few mammal strains). All should be considered to be transmissible to humans. The name Psittacosis is reserved for those human infections produced by *C. psittaci*, since humans can also be affected by other species. Avian infections are designated Avian Chlamydiosis (AC).

Avian Chlamydiosis is very common in pet birds. In Arizona, it was diagnosed in 23 avian necropsies conducted at AzVDL during 2001. And *C. psittaci* was isolated or detected by PCR in 107 avian choanal or cloacal swabs (out of 563 tested) during the same period. The number of human infections is largely unknown because the diagnosis is difficult, and many cases go unreported. The CDC received 846 reports of Human Psittacosis from 1988 through 1998. There was a history of exposure to pet birds in 70% of these cases, most in bird fanciers, veterinarians or pet shop employees.

AzVDL can diagnose chlamydiosis by either chlamydia isolation in tissue culture or by polymerase chain reaction (PCR). The PCR test was developed by Dr. Collins and can detect chlamydiae from avian infections (*C. psittaci*), abortions in ruminants (*C. abortus*) and feline infections (*C. felis*) and probably from other sources as well as many strains have not been sequenced. It does not detect *C. suis*, *C. pecorum*, *C. trachomatis* or *C. pneumoniae*.

Call us at (520) 621 2356 for assistance in the diagnosis of chlamydiosis.

Carlos Reggiardo, DVM, PhD

Diagnostic Update

The following are selected samples of cases submitted to the AzVDL during the fall months of September, October, and November.

Bovine



An adult Jersey cow was reported to have been passing blood for one or two days before she died. An **intussusception** involving the distal small intestine was the cause of death.

Selenium deficiency was diagnosed in a neonatal Aberdeen Angus in southern Arizona. The calf was born at term, but weak, unable to rise or suckle. There were no deformities or lesions suggestive of any infectious disease, no evidence of dystocia, and bacterial and viral cultures were negative. Liver selenium was 0.17 ppm (reference values are 0.25–0.5 ppm in the adult, often higher in neonatal calves) Whole blood selenium in several cows in the herd was in the 0.07 to 0.08 ppm range (reference range 0.16–1.2 ppm). The selenium content of the pasture was 0.02 ppm (diet requirement for beef cows is 0.1 ppm). A limited-intake, selenized salt supplement was available to the cows. The label indicated a content of 25 ppm selenium although the actual analysis value was 15 ppm, highly unlikely to meet dietary requirements with the low pasture levels. This case is typical of the selenium deficiencies observed throughout southern Arizona. Clinical signs are most often confined to late abortions, stillborn and

“weak calves”, sometimes with retention of placenta. Supplements usually require selenium levels in the 60 to 90 ppm range to remedy the condition.

Equine



We received an eighteen-year-old warm blood gelding with a history of sudden onset of toxemia and shock with death following within a few hours. This horse had **disseminated melanoma** with lesions around the anus and multiple lymph nodes. There was also a large (20 cm) black-pigmented mass in the mediastinum just anterior to the heart.

Porcine



Exudative epidermitis (greasy pig disease) was the cause of disseminated exudate skin lesions in one-week-old pigs. Some of the animals died. **Staphylococcus hyicus** was isolated from the tissues. This is a frequent problem in farrowing and nursery facilities.

Transmissible gastroenteritis was diagnosed in three-day-old piglets. Piglets developed acute onset of vomiting and diarrhea and experienced a high mortality rate. At necropsy, the intestines contained watery yellow fluid. The infection was confirmed by fluorescent antibody for coronavirus in sections of intestine.

Small Ruminants



A seven-year-old female Alpine goat had a history of sudden onset of respiratory distress. A **thymoma** in the anterior mediastinum measured approximately 30 cm in diameter.

Pasteurella haemolytica pneumonia and septicemia was the cause of death in a 100 day-old Dorper ram lamb that died following sudden onset of nasal and airway congestion and weakness progressing to moribundity and death within two hours. Gross lesions included petechial and ecchymotic hemorrhages in the muscles of the ventral cervical area and intercostal spaces and in the serosa of the parietal pleura. The anteroventral portions of the lungs were consolidated. Scattered pinpoint foci of necrosis were seen in the liver.

Necrotizing mastitis due to **Bacillus cereus** was the cause of death in a two-year-old Nubian doe. The right half of the udder was dark red/black and had a red cut surface that exuded watery red fluid. This agent is an uncommon cause of mastitis but has been reported in the bovine.

Avian



An adult male conure died after a two-day period of illness. Findings included discolored areas in the liver that were identified as **bile duct carcinoma**.

A **chronic aspiration pneumonia** with marked bronchiectasis and megabacteriosis of the proventriculus and ventriculus were the necropsy findings in a six-year-old parrotlet with a history of upper respiratory disease (“clicking noises”) for several months.

Psittacosis with a secondary *E. coli* hepatitis and septicemia were the cause of death of a 10-year-old White-fronted Amazon that died following an acute illness of short duration.

A four-month-old macaw was presented for weakness and emaciation. Rods were noted on a fecal smear. The bird died and was submitted for necropsy. Gross lesions included thin body condition, loss of muscle mass, ascites and dilated intestines with watery contents. Large numbers of protozoa consistent with *Encephalitozoon sp.* were visualized in degenerating epithelial cells on the surface of intestinal villi. Encephalitozoonosis is an uncommon cause of disease in birds but has been recognized in a wide range of species including lovebirds, ostrich, Yellow-streaked lorry, Eclectus parrots, and Amazon parrots. The infection has been identified in a variety of organs including the intestinal tract, liver, kidney and lung. Clinical signs described include those of anorexia, weight loss, diarrhea, and respiratory distress. Most reported cases have involved sporadic infections of individual birds but encephalitozoonosis was recently reported as a cause of high morbidity and mortality in young (less than 2 weeks) budgerigars in combination with megabacteriosis. Genetic and morphologic analyses of the parasites has identified the agent in many of these cases as *Encephalitozoon hellem* previously recognized only as an agent of human disease. Therefore, besides its importance as an agent of disease in avians, the organism is a potential zoonotic threat, especially to immunocompromised individuals.

Death due to **septicemia** was diagnosed in an eight-month-old African Grey parrot that died unexpectedly without prior sign of illness. Gross lesions included red, wet lungs, red fluid in the air sacs, and a grey-tan discoloration of the liver. Microscopically, bacterial emboli plugged blood vessels in the lung, liver, and spleen. Zones of necrosis surrounded emboli in the liver and spleen. *Bacillus sp.* was isolated from the tissues. The isolate was beta-hemolytic suggesting *Bacillus cereus*. This organism is not considered a primary pathogen but sporadic reports of serious or fatal infections have been reported in mammals. We have seen septicemia resulting from infection with this agent in a small number of avian cases.

A two-and-one-half-year-old male African Grey parrot developed acute onset of wheezing and mewing like a kitten. It worsened and died the following day. **Aspergillosis** of the trachea resulting in tracheal obstruction was the cause of death. Gross lesions included a plug of yellow caseous material occluding the distal trachea. The lungs and air sacs were not affected.

Pigeon **circovirus** infection complicated by mycoplasmal tracheitis and airsacculitis and *Staphylococcus sp.* conjunctivitis was diagnosed in a loft of racing pigeons. Circovirus infection of pigeons is a recently recognized entity. The viral infection is present in lymphoid tissues throughout the body and is thought to contribute to a variety of secondary infections via immunosuppression.

Canine



Pancreatic carcinoma was the cause of ataxia, vomiting, diarrhea, and polyuria in a six-year-old spayed female Labrador. There were metastases to the liver and lymph nodes.

Resuscitative attempts failed in a four-year-old female Dachshund that collapsed suddenly. A 4.0 x 3.2 x 2.5 cm **foreign body** was lodged in the pharynx resulting in obstruction of the larynx. The material consisted of animal tissues including fat, muscle, and connective tissue, which appeared to have been partially cooked.

Sneezing and respiratory distress were reported in a one-year-old female Schnauzer prior to its death. Necropsy findings included diffuse bronchopneumonia. *Staphylococcus aureus* was isolated from the lung and colonies of coccoid bacteria could be seen in the lesions.

Myocardial lymphoma was the unexpected finding in a ten-year-old female Labrador that was found dead. There was diffuse infiltration of the myocardium by neoplastic lymphocytes.

Three three-day-old Weimeraner puppies were presented. They died after a brief period of weakness and abdominal respiration. The only gross findings were congested lungs, meninges, and small intestine. The diagnosis was **septicemia** based on infiltrations of inflammatory cells in the livers and the presence of beta hemolytic *E. coli* in all tissues cultured. Inadequate transfer of passive immunity is a frequent contributor to neonatal septicemia.

An **acute hemorrhagic enteritis** and **septicemia** were the cause of death of a three-month-old Rottweiler puppy fol-

lowing a brief episode of diarrhea with mucus and blood in the stools. Although the puppy had been vaccinated three times, canine parvovirus infection was initially suspected because the gross lesions observed at necropsy were entirely similar to those produced by the virus. Histopathologic examination revealed however a bacterial enteritis with superficial necrosis of the villi, numerous bacterial colonies and extensive neutrophilic infiltration. There was no evidence of parvoviral infection, since the mucosal crypt epithelium, primary target of the parvovirus infection, was unaffected. Large numbers of *Providencia alcalifaciens* and *E. coli* were isolated from intestine, lung and brain. *Providencia alcalifaciens*, previously thought to be a simple enteric commensal, is increasingly implicated in diarrheal disease in children and human food poisonings. Although of unknown significance in dogs, its presence in large numbers in the lesions suggests an etiologic role in this case in conjunction with *E. coli*.

Disseminated intravascular coagulation was the cause of death of a six-year-old English bulldog with disseminated lymphosarcoma affecting the spleen, lymph nodes, liver, myocardium, kidneys and the adrenal glands.

A **hemangiosarcoma** of the right atrium with numerous pulmonary metastases was found at the necropsy of a nine-year-old Shar Pei euthanized after an acute clinical episode of tachypnea, anemia, a "diffuse patchy interstitial pattern" on chest X-rays and hematological evidence of thrombocytopenia, anemia and hypoproteinemia.

Feline



Coccidioidomycosis was found in an eleven-year-old domestic shorthair male. The animal had a history of pneumonia and surgical lobectomy of the right caudal lung lobe. Gross lesions included multiple tan 2 - 3 mm nodules throughout the lungs and some areas of accompanying consolidation of the lungs. Numerous *Coccidioides immitis* spherules were present in the lesions.

Congested lungs, swollen mottled liver, and extensive clear yellow fluid with fibrin clots in the abdomen were identified in a four-month-old female domestic shorthair. Diagnosis of **feline infectious peritonitis (FIP)** was confirmed by histopathology. This condition can be difficult to confirm antemortem. The most definitive test is the identification of typical lesions.

Exotics



A large **squamous cell carcinoma** of the base of the tongue was found during the necropsy of a 31-year-old zebra from a zoological park. It had exhibited progressive weight loss, excessive drooling, and difficulty eating.

Wildlife



Duck Plague was diagnosed in a Muscovy duck received from Litchfield Park, where several ducks had been found dead over the course of two or three weeks. There was a necrotic hepatitis and necrotic and hemorrhagic lesions of the esophagus and intestine. Numerous intranuclear herpesvirus inclusions were observed in the affected tissues.

Canine Distemper was diagnosed in a young female coyote found moribund in the area of River Road and Via Entrada in Tucson.

Fowl pox involving the feet and the mouth was the cause of extensive proliferative lesions in an adult Harris hawk that was found dead. The bird was quite thin and the crop was empty.

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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