

## NARROWING THE DIFFERENTIAL LIST

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In human medicine, it has been determined that the history and physical exam accounts for 80% of the diagnosis. Diagnostic tests then are used to help the physician confirm if their differential list is appropriate or if there needs to be a reevaluation of that list. This suggests that to narrow the list, the astute clinician needs to properly evaluate the patient in relation to the history.

The signalment of the avian patient is just as important as that of a dog or cat. Often I have had clinicians call and say that they have a sick parrot and ask what should they do for it. That would be unheard of when a clinician refers a small animal. For example, is it a hen blue-fronted Amazon parrot or a black-capped male conure? The presenting complaint may need to be narrowed or defined when examined. Is the bird on the bottom of the cage because it is a female wanting to lay an egg or a male that is weak and depressed from an infectious disease process? The 7-year-old female blue-fronted Amazon parrot on the bottom of the cage egg laying is very different than the 6-month-old male black capped conure on the bottom of the cage recently purchased at a bird show.

The history is a major component in narrowing the differential list. Part of the history is based on the physical appearance of the avian patient. If the bird is stable on observation, then there is time for a detailed history. In stable patients, the history should include information regarding husbandry, where and when purchased, and how the bird interacts with the people in its surroundings. What the bird eats is more important than what is offered. Knowing the diversity of foods provided is important for behavioral considerations. The cage and toys used are important from a behavioral perspective and for understanding the potential for heavy metal toxicosis.

When and where a bird was purchased is extremely valuable in determining its exposure to infectious diseases. The purchase of a new bird into the household and the type of bird is also important. The other caveat is the owner's exposure to other birds (eg, by visits to bird fairs, pet stores, and breeding facilities). If the bird is new or there has been an exposure within the past 6 months, this throws the bird into a "new bird" classification, suggesting infectious diseases are more important on the differential list. By knowing the period of incubation of serious bird diseases, the clinician will know if a particular disease is more likely to be ruled in or out of the differential list. This helps determine the diagnostic testing appropriate for the patient. For example, a cockatoo that has been in the house for 3 years but is now having feathering problems may be suggestive on a noninfectious disease until you find out that 6 months ago the owners purchased a lovebird that died 5 weeks later.

If the bird is unstable, the history needs to address the above concerns about infectious disease exposure, along with concerns about trauma and toxin exposure. When the event occurred and how the bird acted after the trauma is very important for the diagnostic and treatment plan. The physical exam will help gain clues as to the ability of the owner to relay reliable historical information. Sometimes the acute emergency was really a chronic problem that was not picked up by the owner soon enough.

Acute toxicosis can occur in free-ranging birds in the house or exposure from owners' lack of knowledge. Since the avian respiratory tree is much more sensitive to inhalants than the human respiratory system, birds are acutely sensitive to a number of toxins that are airborne. Examples include: nonstick cookware containing teflon or polytetrafluorethylene, self-cleaning ovens and drip pans; carbon monoxide and automobile exhaust; smoke from a variety of sources including tobacco, candles with scents, wood or kerosene burning fires; paint fumes; natural gas leaks, and cleaning products such as bleach or ammonia and aerosol sprays.

Birds may also ingest house plants or other plant-based toxins, including avocado. Avocado ingestion and inhalants lead to acute and severe respiratory signs. Plant toxicoses often lead to vomiting or regurgitation, leading rapidly to depression and then to neurologic signs. Lead and zinc ingestion may lead to acute signs particularly when the levels are high. A bird with lead toxicosis, depending on the amount ingested, is associated with signs of depression and/or seizures, regurgitation, and fecal droppings with frank or digested blood. The signs with zinc toxicosis are more vague and owners may not know if their bird has ingested this heavy metal. Signs on presentation include polyuria, polydipsia, diarrhea, regurgitation, and weight loss from anorexia; if toxicosis is severe, then seizures may also occur.

Trauma commonly results in an emergency presentation. The bird standing in the cage with blood on the cage floor or the walls near the cage should be examined for a blood feather. Birds caught on toys need to be freed and provided with supportive care as soon as possible. Birds flying into walls and windows, smashed by doors, hit by ceiling fans, grabbed by dogs or cats, or in other ways traumatized need emergency support. The bird that is bitten or at least been in the mouth of a cat needs to be seen as soon as possible. This is because the most important commensal organism, *Pasteurella sp*, can kill the bird in the first 24 to 48 hours. Birds may act normal at first and so the owner is hesitant to bring in the bird. A bactericidal drug should be administered that shows therapeutic efficacy; appropriate care for the wound and the patient should be initiated and the prognosis should be conveyed as guarded.

## CLINICAL EXAMINATION

The clinical examination has two main components—the physical examination and the behavioral exam. The physical examination includes observations of the

patient and its interactions with its owner and palpation and auscultation of the patient. The second component associated with observations is the behavioral exam. To complete the behavioral exam, photos of the cage and the area where the bird lives are important, along with recordings of the behavior in its home environment. Observational skills often need to be sharpened, compared to those needed for a dog or cat. The signs of birds tend to be more subtle. This may result from their relationship in the food chain—psittacine birds are preyed upon by carnivorous species. They are also flock animals and to show signs suggestive of a problem would cause the flock to expel that bird, leading to its death.

### Subtle Signs of Illness

Getting the avian patient to the veterinarian early on in the course of the disease improves the prognosis. Owners should be taught to recognize subtle sign illness on their first appointment. These signs can be communicated through a handout, as well, but should be explained by the tech staff with emphasis by the veterinarian. Subtle signs of illness may include subtle changes in their appearance and posture along with changes in the quality and color of their feathers. The nares or nostrils may have material in them or wetness on the feathers surrounding them. There may be swellings of the head, or changes in breathing including abnormal sounds or the bird stops vocalizing. Any changes to the color or volume of the droppings, increased amounts of urine or changes in the amounts of food consumed or water drunk should be investigated. Behavior changes are cause for concern. Changes in the legs, feet or beak, increased size of an organ, changes in breathing should also be considered.

Clinicians presented with a bird should watch for these, along with dullness to the eyes, eyes sunken into the skull, indicating dehydration; swellings around the head, suggesting an upper respiratory tract infection or tumor; nasal discharge resulting from an upper respiratory tract infection; fluid, clear or purulent, above the nares or on the cranial margin of the carpus or the wrist on the wing; the bird rubbing its head to “wipe its nose” to clear discharge or to relieve pressure exerted in the sinuses; scratching at the nares or the side of the head frequently; sneezing often, particularly with a discharge; or feather loss around any part of the head, particularly the area around the nares or nostrils

### Serious Signs of Illness

Serious signs of illness include any of the following: eyes closed with long periods of sleepiness; drooping wing or wings; falling off the perch; noticeable and noisy breathing; vomiting/regurgitation; bird remaining on the bottom of the cage; fluffed and ruffled feathers; bird sitting horizontal posture on the perch; any abnormal posture; not vocalizing; not eating or drinking; tail bobbing with each breath; bleeding; soiled vent; standing on only one leg; open-mouthed breathing; or seizing or any abnormal behavior.

### EVALUATING CLINICAL SIGNS

After the physical examination is complete, the clinician needs to determine the number of systems affected, the part(s) affected, and the extent. It should be decided if the symptoms are compatible with an infectious disease, trauma, or organ failure or altered function. If the bird is presented for a behavioral problem, is it exclusively behavioral or is there an organ system problem that results in the condition observed?

Recognizing patterns of disease is an important part of determining the differential list. Acutely infected birds have a normal pectoral muscle mass and their signs usually develop rapidly and are more severe than chronically infected patients. Chronically infected birds commonly have reduced pectoral mass, as they are often partially anorexic or cannot meet the metabolic demand of their disease process over a period of time. This is because birds undergo body plundering of their pectoral muscle mass to meet their metabolic needs. The protein from the muscle is converted to energy through gluconeogenesis. That is why it is important to palpate the pectoral muscle mass. Smaller birds will use their muscle mass for energy faster than larger birds but all will use their muscle mass as the medical condition drains the body of energy.

An example of using the signalment in relation to the physical exam findings is the following. You perform a physical exam on a pigeon and you find that the bird has normal pectoral muscle mass and is bright and alert with torticollis or infrequent neurologic signs—the differential list should include Paramyxovirus-1. Then you do a physical exam on an adult Amazon with neurologic signs. This bird is not bright and alert but fluffed and depressed. It also has increased respiratory effort with increased bronchovesicular sounds and watery diarrhea. The big differential that needs to be addressed is exotic Newcastle disease—another Paramyxovirus that is velogenic and reportable to state and federal agencies. The seriousness of this disease and its possible transmission to other birds places it a special category requiring a definitive diagnosis.

When signs are localized to a system, the diagnostic workup should focus on the common diseases affecting the system. Diagnostic tests need to be performed in order of the most critical for ruling in or out a disease for determining the diagnosis. The shotgun technique of running multiple blood tests and diagnostics does not work—birds have a small blood volume and are easily stressed. The maximum blood to be withdrawn should not exceed 1% of the body weight. A diagnostic plan needs to be developed and thought out before taking any samples. This reduces the need to pick the bird up a second time further adding to stress and causing untoward results. Remember that diagnostic tests help to rule in or out differentials and help to arrive at a diagnosis. It is important to always remember to treat the bird and not the lab results. Owners want answers at the least cost. If you are stumped, remember to refer the bird to another clinician with more experience or expertise or to call a colleague for advice. They may be able to think of something that you may have missed.

The owner will think more highly of you for referring their beloved pet to a clinician with a greater expertise.

There are a greater number of diagnostic tests that are available to the clinician now compared with those 5 years ago. With all tests it is important to understand the sensitivity and the specificity of the test that you choose to help arrive at the diagnosis. Although there are a number of labs offering tests, it is important to choose a lab that has a long-term reputation for performing quality testing for companion birds. Sample size and turn around time are also important considerations. For example, fungal cultures take a considerable amount of time and the wise clinician will start the avian patient on appropriate antifungal drugs for its species and its clinical condition while waiting for the lab results. Fungal cultures of a nasal flush should be compared against the much faster turn around time for an *Aspergillus* sp polymerase chain reaction (PCR) test.

A minimum database for companion birds really is based on the differential diagnosis list. Radiographs represent an extension of our hands and eyes but ultrasound has helped understand organs in a very different way. A CBC helps determine if there may be an infectious or inflammatory response. A monocytosis is suggestive of a more chronic disease, fungal disease, avian mycobacteriosis, or psittacosis. The avian profile helps to determine if there may be liver or kidney involvement or if the concentration of the common inorganic ions are out of the normal range. Biopsies for histopathology or culture help to definitively diagnose the condition of the avian patient.

Gram stains of the choanal slit and the cloaca or fresh feces have been an old standard of avian medicine where more recently cultures have replaced these as the more definitive test. Those of us that have used Gram stains and know how to interpret them use them to rule in or out differentials with the advantage of their quick

access to information. The gram stain of the choanal slit, for example, gives the clinician information regarding the nutritional status of the patient that impacts its immune function. Companion birds should not have any or just a few bacteria or fungal organisms on their choanal gram stain. Large numbers of gram-negative rods when the bird is sick would suggest a treatment plan that would differ from one with large numbers of gram-positive rods and/or cocci with large numbers of budding yeasts. A bird that is fluffed and depressed with few to no gram-negative rods or gram-positive rods suggests some other cause for the underlying problem. Gram stains are often used in combination with cultures.

Parasite exams using a number of techniques are becoming increasingly important in young birds that are raised in large commercial operations. Giardiasis and encephalitis are becoming problems in cockatiel and budgerigar flocks when infected birds pass the disease to other birds at pet stores, or when chicks are infected by their diseased parents. Fecal floats and direct smears can be performed in the clinician's office while electron microscopy, zinc sulfate and ELISA testing from reputable labs can be helpful in finding some of these elusive organisms.

All of these tests need to be used in relation to the clinical condition of the avian patient. There are increasing numbers of tests but they need to be used based on their level of reliability and appropriateness. There are a number of infectious diseases that companion birds acquire where there are no good diagnostic tests available. Clinical judgment and experience remains an important part of avian medicine.

#### RECOMMENDED READING

1. Orosz SE. Diagnostic workup plan. In: Olsen GH, Orosz SE (eds): Manual of Avian Medicine. St. Louis, MO: Mosby; 2000.