Clinical Approach to Common Avian Emergencies

The initial management of an avian emergency is critically important in ensuring the best possible clinical outcome. This article aims to summarise the author's clinical approach to a number of emergency presentations but will not provide specific treatments for all of the conditions covered. Many avian species are masters at hiding early clinical disease. At presentation avian species are often more critical then their owners appreciate. The most common (not exhaustive) clinical signs constituting an avian emergency are; sitting at bottom of the cage, haemorrhage, respiratory distress, regurgitation, anorexia and fitting.

Triage:

Before a critically sick bird is examined the owner should be warned that handling and treatment could exacerbate clinical signs or even lead to death of the bird. While the initial clinical examination should be thorough, good organisation and preparation will lead to the minimum period of restraint. In cases where the bird is not sufficiently stable to undergo a full clinical exam a brief exam is performed (5-10 seconds duration) while the bird is being transferred to hospitalisation cage/incubator/oxygen tent etc. 15 minutes pre-oxygenation is often prudent in critical patients, prior to handling or anaesthesia. In many avian emergencies a short period of general anaesthesia will be required to facilitate diagnostic testing (safe phlebotomy/radiography etc). The rest of the clinical exam can be performed at this stage.

Many useful assessments can be made while observing the bird in its cage. Where immediate interventions are not required the bird should be observed for at least 10minutes to allow it to start showing its clinical signs. Posture, ambulation, perching, respiratory status, environmental interaction, feather condition, eye shape and falling asleep, fluffing of feathers etc can all be evaluated. Faeces in the travel cage should be examined.

A clinical history can be taken during these observations. Where the bird requires immediate intervention a colleague can take a detailed history while the bird is being stabilised. Written history questionnaires are particularly useful.

Initial symptomatic treatment including; heated environment (29-30°C), oxygen supplementation, fluid therapy and nutritional support (rehydration prior to addressing hypoglycaemia is recommended) will benefit many avian emergencies.

Initial clinical exam (may be adapted depending on species and presenting clinical signs):

- All patients should have an accurate weight recorded
- Crop palpated for food/foreign material
- Choana (roof of oropharynx) – blunted papillae (hypovitaminosis A), inflammation, papilloma, foreign material

- Examination of integument – feathers parted. Skin turgor assess hydration
- Assessment of body condition made (pectoral muscle mass – prominence of sternal karina))
- Beak and head examined
- Examination of refill time (ulna vein), to evaluate perfusion
- Auscultation can reveal abnormalities is heart rhythm, rate and murmurs. Respiratory abnormalities can also be auscultated over the trachea, lungs and air sacs.
- Coeliom should always be palpated – in normal birds (except carnivorous species whose ventriculus is minimal) often only the ventriculus is palpable
- Vent and cloaca examined – prolapse, inflammation, (papilloma in New World spp. e.g. Amazons and Macaws) masses
- Brief neurological assessment

Following an initial clinical examination a decision on appropriate symptomatic therapy (if not already instigated) and diagnostic testing is required. Blood work is very commonly performed. Venipuncture from the right jugular vein is the authors preferred site, medial metatarsal and superficial ulna veins are alternatives. If an intravenous cannula (bacilic/superficial ulna vein) is to be placed blood collection via the catheter can be performed during placement. Blood volumes greater then 1.0ml/100g body weight should never be collected in avian species. In most critical patients 0.5ml/100g is the maximum safe volume. Complete blood counts, biochemical analysis and blood smear assessment are performed in the majority of patients. For manual haematology blood collected into an EDTA container and stained with Rees & Eckers can be examined on a Neubauer-ruled haematocytometer for immediate results. Stress leucograms have been reported in a number of avian species – particularly macaws. Ancillary blood work (heavy metal analysis, chlamydophila PCR/Serology, Aspergillosis serology, PBFD testing etc.) can be performed based on history, clinical signs and initial blood results.

Cytological examination of diagnostic samples are commonly performed in avian emergencies. Nasal flushes, faecal/cloacal swabs, crop swabs and tracheal samples are all frequently examined. Being able to perform basic cytological examinations 'in house' allows earlier instigation of appropriate treatment, which improves the prognosis in many avian emergencies.

Radiography is a vital tool in avian medicine. Accurate positioning is paramount for accurate interpretation and taking conscious radiographs is rarely successful and often counter-productive. Ventral-dorsal and lateral survey radiographs are commonly performed. Contrast radiographs are useful when assessing the coelom in birds. If anaesthesia is to be performed in an avian patient it is prudent to perform all the required diagnostic tests at one time (phlebotomy, radiographs, tracheoscopy etc.) so repeated anaesthesia is not required. IV/IO catheters can also be placed at this time.

Specific Avian Emergencies:

Respiratory distress:

Respiratory distress is usually a life threatening emergency and immediate stabilisation will be required. A warmed hospitalisation cage or incubator with oxygen concentrations initially around 80% (5l/min flow rates usually sufficient) are required. The use of Butorphanol / midazolam (anxiolytic properties) and a bronchodilator (e.g. terbutaline) can be advantageous. Respiratory distress can be split into upper and lower respiratory tract disease – differentiated with a thorough history, observation in the oxygen enriched environment and clinical examination (including auscultation). Dyspnoea is not always a result of primary respiratory disease – coelomic distension (fluid, masses, organomegally) can put significant pressure on the air sac system resulting in dyspnoea.

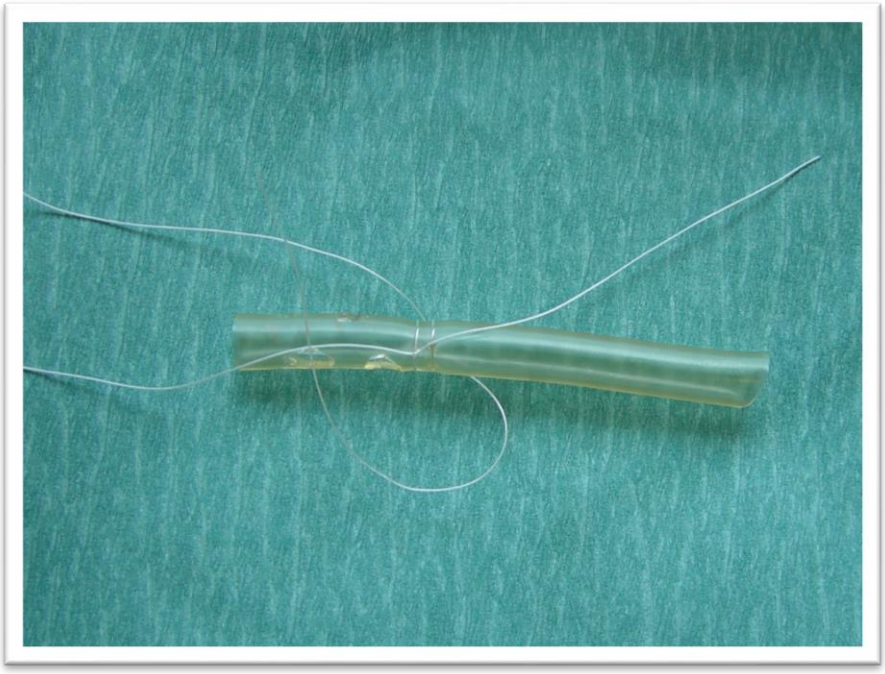
<u>Disease of the upper airway & infraorbital sinus:</u>

Underlying hypovitaminosis A – most commonly due to feeding an inadequate seed based diet is responsible for much URT pathology. Both bacterial and fungal infection is common as a result of the squamous metaplasia. Infection can extend into the peri-orbital sinus which often results in chronic recurrent infection due to the poor sinus drainage. Cytology of exudates/nasal flush should be performed in all cases as well as culture and sensitivity. Nasal flushes can be both a benefit both diagnostically and in treating the condition. Antibiotics/antifungals based on culture and sensitivity both via systemic and topical routes are utilised in most cases.

<u>Tracheal disease (glottis to syrinx)</u>

The syrinx is the 'avian voice box'. Any bird presenting with a voice change/loss of voice should be investigated for possible syringeal disease (granuloma/foreign body). Other common signs include: dyspnoea and tachypnoea, respiratory stridor, open mouth breathing. Disease is often progressive but may be sudden onset.

Emergency air sac intubation should be performed in birds with severe respiratory distress with suspect tracheal/syringeal obstruction. A short period of generally anaesthesia will be required.



Have ready, a sterilised air sac tube – the diameter should be 25% larger than the patients trachea. The section of tube which will enter the airsac, should be no longer than 1/3 of the width of the patient's coeliom at the level of the last rib. Sutures should be preplaced..

Unless pathology dictates otherwise, use the left caudal thoracic air sac (larger than the right).

The anaesthetised bird should be placed in right lateral recumbency. The wing is abducted dorsally and legs retracted caudally. The last rib is located; access is either between the 7th and 8th rib, at a level 1/3 from the top of the rib, or caudal to the 8th (last) rib. The skin should be prepared sterilely and following a skin incision use blunt dissection to access the caudal thoracic air sac via the intercostal muscles.

(pictures taken of a cadaver specimen)

Place your tube into the airsac. Occlude the tube whilst it is sutured in place. One suture should encircle the last rib to prevent the tube migrating from the airsac. If anaesthesia is to be maintained then attach the anaesthetic circuit and reduce flow rate to 300ml/kg/minute.

This will stabilise the patient sufficiently so that diagnostics/treatment can be performed. Birds respiratory function will often improve dramatically under anaesthetic due to fear and stress being relieved.

Tracheoscopy using a 0° rigid endoscope is the single most useful diagnostic procedure. Transillumination of the trachea can be used in small birds to diagnose a possible foreign bodies/obstructions. Radiographs, blood work and endotracheal washes are also performed.

In large birds endoscopic removal of granulomas/foreign bodies can be performed. Surgical approaches to the trachea/syrinx have been described and resection and anastomosis of damaged trachea can be performed in the case of post anaesthetic tracheal strictures (most common in macaws), or fungal granulomas.

Small airway disease

Disease may result from bacterial/fungal pneumonia, toxin exposure (PTFE toxicity) and allergic respiratory disease.
Birds should be initially stabilised with oxygen +- bronchodilators before diagnostic testing is performed. CBC, biochemistry, radiographs, endoscopy, endoscopic guided lung biopsy and Aspergillosis PCR.

In cases of respiratory disease caused by toxic exposure symptomatic therapy with oxygen, terbutaline +- sedatives such as Butorphanol can be used. Medications can be provided via nebulization (eg terbutaline, acetylcystein)

In cases where bacterial or fungal infection is identified or suspected then specific therapy can be provided.

Lung/Air sac disease

Auscultation is commonly normal in cases of parenchymal disease. Fungal, bacterial infection (including psittacosis), cardiac disease with secondary pulmonary oedema, aspiration pneumonia and neoplasia are all common causes of disease. Haematology, biochemistry, radiographs and chlamydophila PCR/serology should be performed in the majority of cases. Coelomic endoscopy is particularly useful at assessing the air sacs – any lesions identified can be biopsied.

Non-respiratory tract causes of dyspnoea

Dystocia, organomegally, ascities and masses can all cause respiratory distress. In the case of ascites – symptoms can be relieved by performing coelomicentesis – ideally ultrasound guided (access should be via the exact midline, via a point just caudal to the yolk sac attachment, so that the air sacs are not penetrated). Cytology and cultures should be performed on the aspirated fluid. Protein losing hepatopathy or enteropathy can both lead to formation of coelomic fluid as can cardiac disease and reproductive disease (egg yolk coeliomitis – fat globules will be seen on cytology, as long as it hasn't been fixed with alcohol)). In cases of dystocia a period of oxygen stabilisation is followed by treatment to correct the dystocia. Dystocia related dyspnoea is most common in chronic egg laying birds. These birds often have significant environmental stimuli which is the underlying cause of the problem.

Haematology is particularly useful at differentiating infection and non-infectious causes. Fungal and bacterial disease will often be associated with marked leukocytosis. Radiographs, echocardiogram, coelomic endoscopy (+ biopsy) are commonly performed.

Voriconazole is the most successful agent at treating aspergillosis in most species. Antibiotics and bronchodilators can be provided systemically and via nebulisation. Doxycyline (long acting injection – Vibravenous) is the most common treatment of psittacosis in pet birds.

Reproductive Emergencies

Chronic egg laying often has significant underlying husbandry cause. Chronic egg laying can results in a large number of reproductive emergencies including; dystocia, peritonitis, hypocalcaemia.

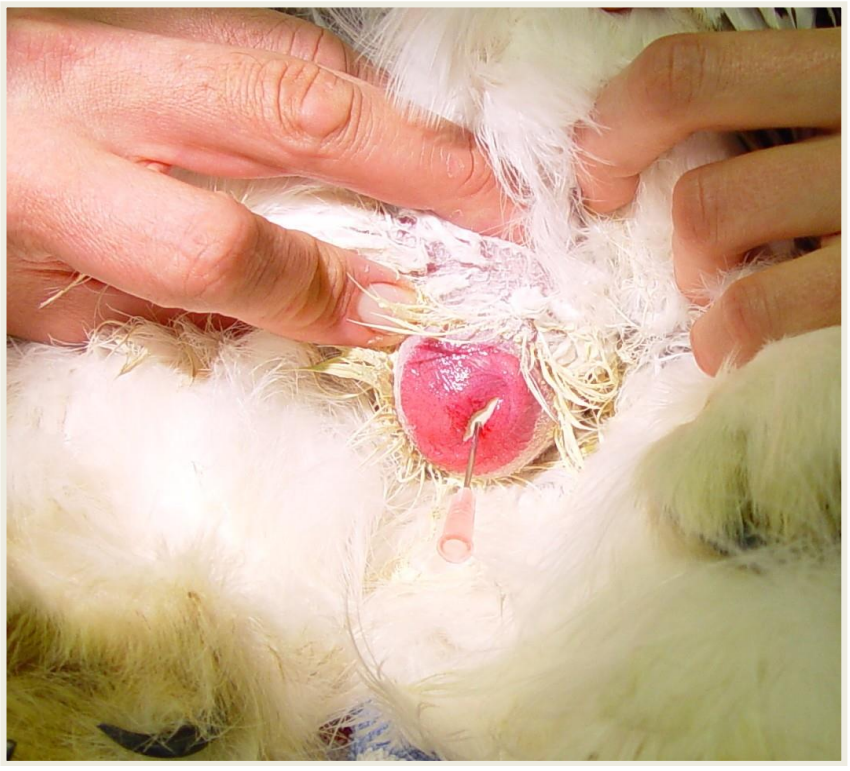
Dystocia can commonly be diagnosed purely on history and clinical examination. Birds commonly present with dyspnoea, tail pump breathing, straining, wide stance and hind limb paresis/paralysis. Radiographs and ultrasound can both be used to diagnose the eggs position and determine the number of eggs. Ultrasound is particularly useful in detecting soft shelled or shell-less eggs.

Haematology and biochemistry values can be evaluated. Hypercholesterolaemia, hyper or hypo-calcaemia, and hyperglobulinaemia are often seen.

Symptomatic therapy alone will often results in oviposition; parenteral calcium, oxygen therapy, analgesia, warm environment and IV/IO fluid therapy. Egg peritonitis is a common sequel to egg binding (as the subsequent follicle goes into reverse ending in the coeliom). Antibiotics should be provided where infection is suspected. Prostoglandins or oxytocin (use controversial) can be used in cases of non-obstructive dystocia.

Manual manipulation may be used where symptomatic therapy alone is not successful. Lubricant should be instilled into the cloaca. A blunt lubricated probe may be inserted into the cloaca to dilate the vaginal opening into the oviduct. Adhesions between the egg and oviduct can be carefully broken down with the probe. Where manual manipulation is not successful per-cloacal (ideally) or transcoelomic (increased risk infection) ovocentesis may be performed. This is followed by implosion of the egg and its subsequent removal. Surgical laparotomy and salpingotomy can be performed where trans-cloacal removal of the egg cannot be performed.

Egg visible at the cloaca – needle inserted and per-cloacal ovocentesis performed:



Hormonal treatments (deslorelin acetate implants) or surgical therapy (salpingohysterectomy) can be performed to prevent recurrence of the reproductive disease.

Trauma

Symptomatic therapy common to most traumatic injuries is controlling haemorrhage, oxygen therapy, warmth, fluid therapy (oxyglobin or transfusions if required), analgesia and broad spectrum antibiotics if contaminated wounds.

Wounds and lacerations such as bite wounds from other household pets or damage from cage bars, wire are common. Small wounds are best left open to drain and heal by secondary intention. Larger fresh wounds can be fully or partially closed after being thoroughly lavaged. Chronic contaminated or infected wounds should not be closed and managed as a open wound – the option of delayed closure can be employed when infection has been controlled. Psittacines undergoing wound management will often require the placement of a protective collar as self mutilation is common.

Beaks and nail injuries can haemorrhage significantly. Nails can be cauterized using silver nitrate pencils or electro cautery. Beak haemorrhage must be treated under anaesthesia either with electro-cautery or silver nitrate pencils.

Self-mutilation is common in pet psittacines with Grey Parrots & Cockatoos being particularly susceptible. Flying injuries or self trauma can both result in damage to blood feathers – pressure can often stem the flow of blood. Broken feather shafts can be ligated or removed. Haemostatic agents such as silver nitrate should not be used on feather follicles as permanent damage can result.

Open fractures can be true emergencies, closed fractures require initial external coaption to prevent further injury while a treatment plan is formulated. In open fractures tissues should be thoroughly lavaged, replace bone fragments under skin where possible and a supportive bandage placed prior to surgery.

Seizure and other Neurological Emergencies

Seizure behavior has a large number of potential differential diagnoses. For treatment to be successful a diagnosis needs to be made at the earliest opportunity.

Midazolam or diazepam can be used in birds suffering from status epilepticus. In seizure not controllable with benzodiazepemes general anaesthesia followed by phenobarbital load can be performed.

Hypocalcaemia, hypo or hyper glycaemia, toxin exposure (including heavy metal toxicity), trauma, chlamydiosis, proventricular dilation disease and hypertension can all lead to seizuring. Following initial medical stabilisation a diagnostic workup including; CBC, biochemistry (including ionized calcium and electrolytes), radiographs and heavy metal screening (zinc and lead as standard). Doppler blood pressure monitoring should be performed. When a diagnosis is made the underlying cause can be addressed.

Birds with heavy metal toxicity may or may not have metalic foreign bodies within the GI tract and therefor cannot be ruled out solely on radiography.

Galvanised cage bars and fittings, padlocks, toys are common sources within the home. Heavy metal toxicity is treated with chelation therapy (Usually CaEDTA).

Head trauma can often be diagnosed based on history and clinical signs – although trauma is often not visualized by the owner. Where trauma has been identified an underlying cause for the accident should be identified (hypocalaemia, heavy metal toxicity, night frights, flight feather damage etc). Dobbler blood pressure should be recorded and treatment is based around keeping this stable. Any seizure should be controlled initially with benzodiazepems then with phenobarbital. Systemic hypotension where intracranial hypertension is present is associated with a poorer outcome. The use of loop diuretics such as furosemide as a standard treatment for head injury cases is therefore contraindicated. Blood pressure should be maintained between 90 and 120mmHg systolic. Controlled bolus (10ml/kg) of isotonic crystalloids can be given if systemic hypotension is identified. Mannitol may still be considered where the birds neurological signs are deteriorating despite other treatments – this is thought to have a benefit at maintaining cranial perfusion. The use of corticosteroids is controversial and poorly researched in avian patients.

Psittacosis

Psittacosis most commonly presents with respiratory (mild to severe) or gastrointestinal signs but severe multisystemic disease can occur, all can result in emergency presentation. All sick pet psittacines of unknown health status should be tested for *Chlamydia psittaci*. No test is 100% sensitive. PCR testing can result in a high number of false negatives due to intermittent shedding (less common in a clinically sick bird) but can diagnose acute infection (from 5 days in oral swabs). Serology will not detect acute (<2 weeks) infection where the bird has not seroconverted. You can also get false positive results where a bird is tested that has been exposed to the bacteria but is not infected. Treatment for psittacosis is based on supportive therapy and IM (50-100mg/kg IM once a week for 6 weeks) injections of long acting doxycycline (vibravenous – imported from Europe with special treatment certificate STC)

Renal disease

Dehydration, electrolyte abnormalities, gout (articular/visceral), non regenerative anaemia can all result from renal disease. Renal disease often results in anorexia leading to weight loss/starvation. A CBC and biochemistry should be performed – a persistent elevation in uric acid is the most useful biochemical finding in renal disease. Blood pressure should be monitored. Elevated uric acid is commonly seen in dehydrated patients suffering from another medical condition and will resolve following fluid resuscitation. Radiographs, ultrasound examination, coelomic endoscopy are useful imaging techniques when evaluating the kidneys.

Renal biopsy is still not commonly performed in avian patients and in many cases of renal disease the underlying cause is not identified. Despite the underlying cause treatment will be based around intravenous or intraosseous fluid therapy to correct dehydration, reduce the uric acid and correct electrolyte abnormalities. Nutritional support should be provided as anorexia is common. Allopurinol can be given to treat elevated uric acid and reduce the instance of gout. Hypertension should be treated with ace-inhibitors such as enalepril or benazepril. Cases of glomerular disease may benefit from omega-3 fatty acids. If underlying bacterial or fungal disease is suspected appropriate broad spectrum therapy should be provided.

Gastrointestinal disease

GI disease can lead to dehydration, electrolyte imbalances and starvation. Diarrhoea needs to be differentiated from polyuria, pathogenic vomiting require differentiating from behavioral regurgitation. In debilitated birds vomiting/regurgitation often results in aspiration pneumonia. Crop infections (ingluvitis), gastritis/enteritis, proventricular dilatation disease, chlamydophila, parasitic disease, heavy metal toxicity, sepsis, pancreatitis and hepatopathy. Underlying husbandry problems, especially seed diets (hypovitaminosis A, toxin contaminated, fungal contaminated) are responsible for many gastrointestinal infections. Psittacine proventricular dilation disease should be considered as a differential.

Supportive therapy including – fluid therapy, nutritional support, correcting electrolyte imbalances should be performed. Diagnostic tests including; CBC, biochemistry, chlamydophila PCR/Serology, heavy metal screen, crop cytology, faecal gram stain, radiographs (contrast where required), fluoroscopy, bornovirus serology/pcr.

References:

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