Diagnosis, Differential Diagnosis & Treatment of Vomiting/Regurgitation

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If the bird has **Vomiting or Regurgitation** look for the following key features.

Regurgitation:

- is controlled - usually to mate or shiny objects/mirror
- odour not strong or sour

Vomiting:

- is uncontrolled - often mucous and seeds scattered around cage and on head
- often has sour odour

Diagnostic Approach

- Collect History
- Palpate crop
- Observe behaviour
- Perform Crop wash and stains of smears
- Radiographs
  - Plain
  - Barium –as a general guide, it should empty from crop within 30 minutes

Take crop wash with warmed sterile saline to identify:

- Bacteria- Staphs, E. coli common
  - Use Gram stain and culture
- Candida - Gram stain
  - Make certain they are budding or have hyphae and are not confused with dietary yeasts
- Parasites - examine saline smear
  - Trichomonas
  - Capillaria eggs

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Differential Diagnosis:

1. Normal/Physiological
2. Sexual Frustration/ Randy Budgie Syndrome
3. Stress
4. Systemic disease
   (a) Renal Disease
   (b) Liver disease
5. Poisons/Toxins
6. Candida
7. Obstruction
8. Crop or proventricular Impaction/Foreign Body
9. Nutritional Causes
10. Inflammation of Oesophagus
11. Coracoid fracture

1. Normal/ Physiological

* Courtship Behaviour
* Feeding behaviour of parents

In some individuals, active regurgitation behaviour is normal.

History

Onset associated with puberty in maturing bird
Primarily in large Parrots (Cockatoos, Macaws)
Onset of Breeding Season or Breeding Activity.
Observe for signs of mating, courtship, and nesting.
Fear. Bird may panic if approached too closely.

2. Sexual Frustration/ Randy Budgie Syndrome

A sign of frustrated sexual behaviour leading to misplaced courtship behaviour. Often accompanied by regurgitation to objects - particularly reflective-surface objects (especially mirror) or the owner's hand. Can be seen in most parrots. Masturbation is a sign of frustrated sexual behaviour leading to misplaced courtship behaviour.

History

usually a single bird
hand raised or often strongly bonded to one person
Can be seen in most parrots especially Cockatiels and Budgerigars.

Clinical signs

Bird is bright, alert and responsive.
excessive regurgitation
masturbatory behaviour
unexplained outbursts of aggression
may be accompanied by other signs of behavioural problems: feather plucking, screaming, self-mutilation, and destructiveness.

Diagnosis

Clinical examination
Need to differentiate vomiting from regurgitation - see above

3. Stress

Reaction to hand feeding in injured wild birds eg. Penguins, Pelicans, Cormorants.

These birds respond to the stress of captivity and hand feeding by regurgitating the food. They are best treated in a location where there are no mammals and by people experienced with their care. Feeding in muted light with a minimal handling may have some success.

4. Systemic disease

(a) Renal disease

Swelling of kidney may place pressure on Sciatic Nerve
Birds are usually depressed
Unilateral problem initially
Differentiate Acute Renal Disease from Chronic Renal Disease

ACUTE: more likely infection or poisoning/toxin.
Prognosis is guarded.
Bird in good body condition
Vent soiled
Polyuria/Polyurates with normal faeces
Urates/uric acid dispersed through urine
Polydipsia
anorexia
vomiting may be present
dehydration (increased PCV, TPP)
PCV & TPP can be normal with blood loss anaemia and rise in globulin fraction compensating for changes related to the disease.
haematuria may be present (frank blood to tomato soup)

Increased blood Uric Acid levels

CHRONIC: more likely neoplasia, low grade chronic poisons or chronic renal failure with degenerative disease.
Prognosis is poor.
Some degree of weight loss
vent soiling only mild if present
bird not as obviously depressed and may be intermittent polydipsia but not anorexic
no haematuria
no vomiting
excess urine containing some strands of urates
urates/uric acid normal colour and consistency
Lameness, white crystal deposits may be present in feet and legs
If tumour is large may see abdominal enlargement and increased respiratory effort due to space occupying lesion.

(b) Liver disease

Some of the components of the intrinsic coagulation pathway are derived from the liver. In hepatic disease these may be reduced leading to increased clotting time.

Clinical signs

Overgrowth of the claws and upper beak may be due to liver disease in birds on poor nutrition.
"Sick Bird Look" - "Classical" non specific signs of illness:

depression
anorexia
emaciation
diarrhoea
dyspnoea.
yellow to green urates/uric acid.

Diagnosis

Collect blood for investigation of liver disease
Serum biochemistry - SGOT raised levels
Urate discolouration is usually green
Impression smears - Gram stain, Macchiovello or Jiminez stains
Histopathology from biopsy or post mortem collection of material - look for inclusion bodies, chlamydia elementary bodies and specific changes to hepatocytes.
Radiography

Diagnostic signs of liver disease:

9. Urate discolouration with liver disease from restriction of bile secretion is usually green form Biliverdin - the bile pigment end product from the degradation of haemoglobin.
10. Serum biochemistry - SGOT & ALP raised levels
11. Impression smears - Gram stain, Macchiovello or Jiminez stains
12. Histopathology from biopsy or post mortem collection of material - look for inclusion bodies, chlamydia elementary bodies and specific changes to hepatocytes.
13. Radiography - change in cardio-hepatic silhouette.

5. Poisons/Toxins

(a) Indoor plants. Those reported to have toxic effects include:

Ivy	Wisteria
Pointsettia	Datura

(b) Heavy metal poisoning
History
eating/chewing cage wire or objects likely to contain lead, zinc or mercury

Clinical signs

red, green or black diarrhoea
Vomiting
Crop distended with fluid
"Sick" bird
Polydipsia/Polyuria

Diagnosis

Radiographs - often see metal densities in gizzard
Blood lead levels - collect in heparin greater than 20 mcg/dl are suspicious, and greater than 60 mcg/dl are strongly suggestive of a diagnosis
Increased Uric Acid levels greater than 20mg/dl
Increased blood protoporphyrin levels over 40 ppm
Increased CPK levels. Normal for most birds is 100-200 IU/ml

6. Candida

Candida albicans is a commensal yeast of humans and a common environmental organism. In birds it is an opportunistic pathogen. The most common location it causes problems is the crop of young birds (especially budgerigars and Quarrions). It may be a primary or secondary invader. In some cases it is reported to become pathogenic when there is a decrease in the normal bacterial flora - commonly a course of antibiotics or some form of immunosuppression. Because of their age and poorly developed immune system, candidiasis is the most common cause of crop problems in young parrots, if there is a hygiene breakdown while they are being hand-reared.

Clinical Signs

Regurgitation/vomiting
delayed crop emptying time
depression
anorexia
distended crop - fluid contents
White plaques on crop mucosa
Sweet odour to breath or vomitus
Candida lesions may be present in mouth (plaques)
diarrhoea
weight loss

Diagnosis

Clinical examination
Sterile swab from lesions or crop wash
- Gram stain (see note below)
- cytology
- wet mount (warm saline)

Optional extras
- Crop biopsy & histopathology
- Check for other primary diseases
- Circovirus (PBFD), Trichomonas, Vitamin A deficiency, bacterial infections, viruses (poxvirus and other neonatal viruses), foreign bodies, toxins.

Gram stain for *Candida*: The presence of yeasts on a smear is not necessarily diagnostic for it being pathogenic because of its ubiquitous nature. To demonstrate invasion of the mucosa you would need histopathology. As a guide, the presence of large numbers of yeasts that are budding is more likely to be diagnostic. The presence of branching hyphae is also diagnostic but they are a rare finding in live birds. A negative finding on a crop-wash sample is not always reliable, as in some cases a deep mucosal scraping is necessary to detect the yeast fruiting bodies.

7. Obstruction

(a) Thyroid Gland Hyperplasia (Goitre)

Occasionally seen in Budgerigars. Thought to be from Iodine deficiency in diet or hypothyroidism. As gland increases in size it places pressure on trachea at thoracic inlet. Birds often develop squeaking respiration.

Diagnosis:

(a) In Budgerigars suspicion with birds with crop emptying problems and squeaking respiration (pressure on trachea at thoracic inlet) that have negative crop wash results for the other common pathogens. Use a therapeutic trial with thyroxine.

(b) TSH response test. Use in species other than Budgerigar to confirm a diagnosis - there is variation in normal and resting levels of each species, however there should be at least a doubling of serum Thyroxine levels after stimulation with TSH. Major problem is to find a reliable laboratory to perform the serum thyroxine levels pre and post TSH stimulation.

Clinical signs

distended crop
dyspnoea
squeaking respiration (pressure on trachea at thoracic inlet)

Diagnosis

In Budgerigars

suspect if crop emptying problems
therapeutic trial with thyroxine if crop wash is negative for the other common pathogens

In species other than Budgerigar

TSH response test. Use to confirm a diagnosis.
There is variation in normal and resting levels of each species, however there should be at least a doubling of serum Thyroxine levels after stimulation with TSH. Major problem is to find a reliable laboratory to perform the serum thyroxine levels pre and post TSH stimulation.

(b) Megabacteriosis

An obstruction of the proventricular outflow at the distal section of the proventriculus and junction with the ventriculus. It causes problems with motility and hydrochloric acid production in the proventriculus. The organism may be present in psittacines, passerines and Japanese Quail without being pathogenic.

A common problem in Budgerigar, Lovebirds, Canary and Gouldian finch, where it causes a wasting disease and eventually death. Large species appear to tolerate its presence well. It is an emerging problem in young, hand-reared parrots.

Clinical signs

distended crop & proventriculus
chronic weight loss
regurgitation
passing soft stool containing undigested seed

Diagnosis

In high-risk species
suspect if crop emptying problems
Gram stain of smears from crop aspirate or faeces – false negatives are common and do not rule out its presence
very large gram positive rods/filamentous
poorly staining (stippling)

Treatment

Amphotericin B or Itraconazole PO

8. Crop or proventricular Impaction/Foreign Body

Seen in Chickens, pheasants and quail in an aviary situation, particularly with food shortage. May be a problem in juvenile Ostrich.

History

overeating indigestible fibrous food
(such as long grass, hay, seed husks).
crop stasis

Diagnosis

Clinical examination reveals an enlarged doughy crop that fails to empty.
Palpate fibrous material in crop

9. Nutritional Causes

(a) Excess grit ingestion

When grit is provided ad libitum some birds will overconsume and impact the crop, proventriculus and gizzard. It is suspected that these birds may have primary disease elsewhere.

Clinical signs

consuming large amounts of grit
crop distended with grit
may or may not be signs of disease elsewhere

Diagnosis

clinical examination
evaluate bird for
malnutrition
Liver disease
Kidney disease
Pancreatitis

(b) Provision of cold food

This is particularly a problem with the provision of frozen food such as vegetables that have not been allowed to thaw properly.

Clinical signs

distended crop

Diagnosis

clinical examination
history of feeding cold food

(c) Vitamin E/Selenium deficiency

This syndrome has been reported as a paralysis that responds to supplementation with selenium and vitamin E.

Clinical signs

weakness
crop distended
paralysis legs or wings

Diagnosis

Elevated serum levels of creatine phosphokinase (CPK) are suggestive of the myopathy found with this disease.
Suspect this with a diet low in green leafy vegetables, eggs or vegetable/seed oils that are rich sources of Vitamin E. Wheatgerm oil is a natural rich source of vitamin E.

Faecal examination to detect *Giardia spp.* which causes a secondary malabsorption of vitamins.
Diet history may reveal the presence of rancid fats (especially cod liver oil) which interferes with vitamin E. High levels of oils as dietary supplements may interfere with absorption of vitamin E.

(d) Excessive Vitamin D

Some juvenile Macaw chicks appear to be more prone to developing toxicity to oversupplementation with Vitamin D3.

Clinical signs

crop stasis
regurgitation after feeding
articular gout

Diagnosis

Blood sample
- increased serum Uric Acid levels
- increased serum Calcium levels

Radiography
- enlarged kidneys
- calcification of renal tubules & proventriculus

Post mortem examination
- widespread calcification of soft tissues
- visceral gout

10. Inflammation of Oesophagus

The following signs should be considered:

(a) Candidiasis
(b) Trichomoniasis
(c) Parasite infestation
Capillaria
Serratospiculum

11. Coracoid fracture

Callus formation may mechanically impede crop emptying

Diagnosis

radiographs
callus from fractured coracoid impinging on oesophagus at thoracic inlet