

AVIAN DISEASES

Pet Bird Board

Review

OCW Zoological Medicine 2008

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PARROTS

Class AVES

Order PSITTACIFORMES

Amazons, macaws, conures, lovebirds,
parrots, parrotlets, lories, lorikeets,
parakeets, cockatoos, cockatiels

Diagnostic and therapeutic techniques
The Basics of Diagnosis

- History
- Physical
examination



Diagnostic and therapeutic techniques

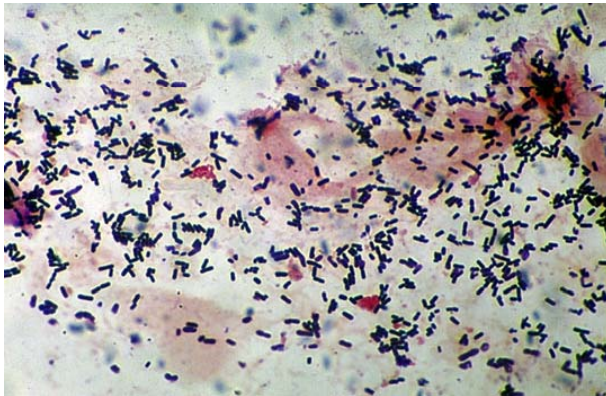
Routine Diagnostics

- Fecal examination
- Cloacal and choanal cultures
- Baseline bloodwork
- Serology
- Radiology

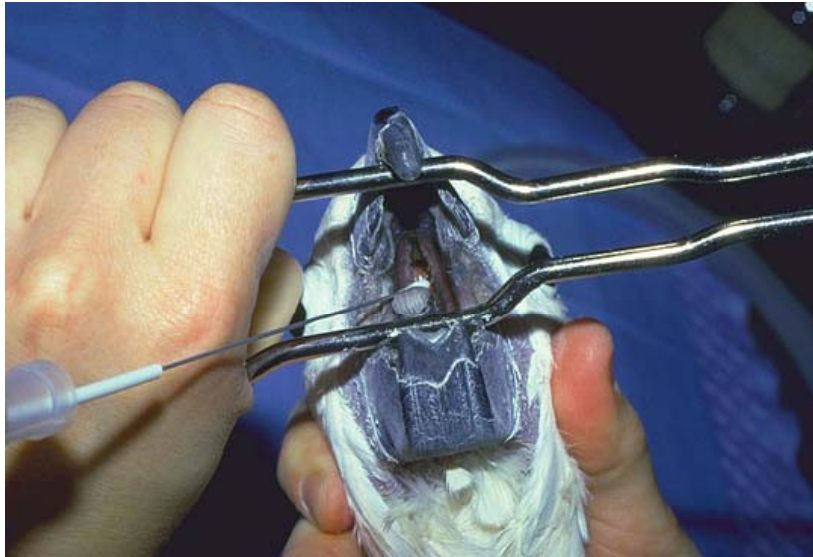
Diagnostic and therapeutic techniques

Fecal examination

- Direct (saline)
- Flotation
- Gram stain



Diagnostic and therapeutic techniques
Routine Cultures



- Choanal cultures
- Cloacal cultures



Diagnostic and therapeutic techniques

Routine Blood Work

Sample collection

- Jugular vein
- Cutaneous Ulnar vein
- Metatarsal vein
- Volumes not to exceed 1% of body weight in grams





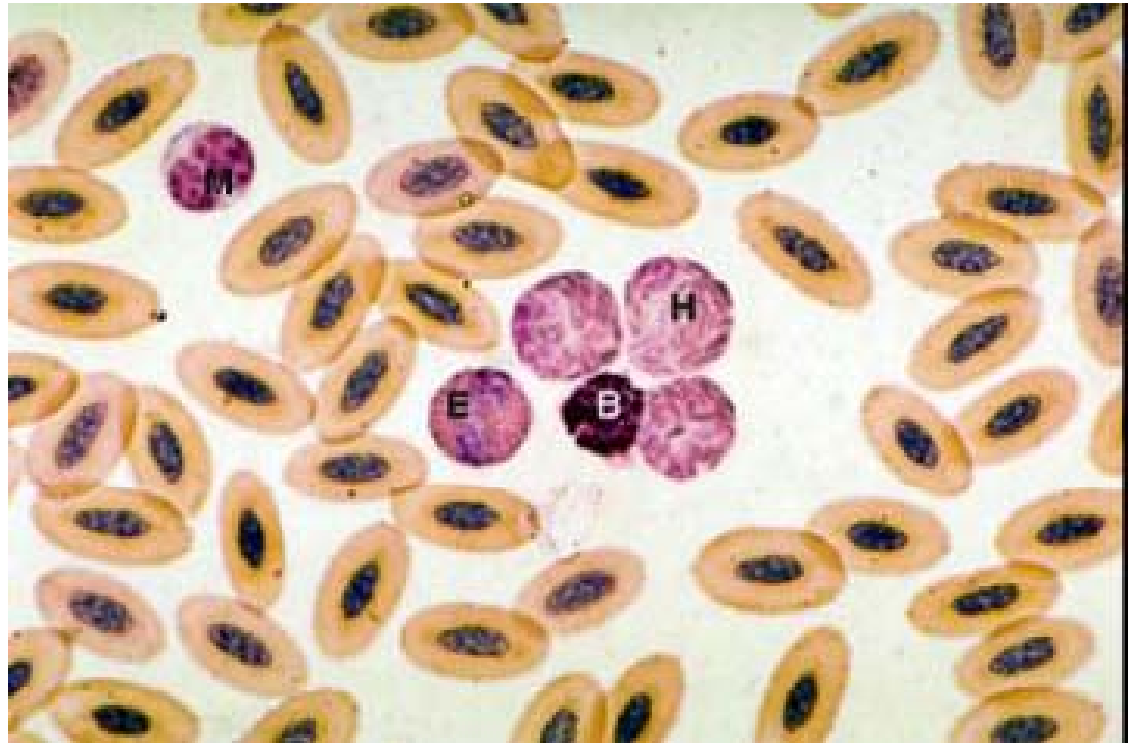
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Diagnostic and therapeutic techniques

Avian Blood Cells

- Red blood cells
- Heterophils
- Eosinophils
- Basophils

- Lymphocytes
- Monocytes
- Thrombocytes



Serum Chemistry

– minimum database

- Uric acid
- Total protein
- Calcium
- Phosphorus
- Glucose
- Aspartate transaminase (AST)
- Bile acids

Diagnostic and therapeutic techniques

Serology, PCR etc.

- Viral screening
 - Poultry viruses – many!!
 - Polyomavirus
 - Psittacine Beak & Feather Disease (circovirus)
 - Environmental screening options

Diagnostic and therapeutic techniques

Serology, PCR etc.

- Aspergillus testing
 - Serology
 - Protein electrophoresis
- Chlamydia testing
 - Antigen vs. antibody testing
 - PCR

Diagnostic and therapeutic techniques

Sex determination



Diagnostic and therapeutic techniques
Fluid Therapy - Hydration needs

- Daily maintenance

60-100 ml/kg/day

OR

$$\text{ml/day} = 78 \times \text{BW}_{\text{kg}}^{0.75}$$

- Degree of dehydration
- Continuing losses

Diagnostic and therapeutic techniques

Therapeutic Administration

- Oral
- Subcutaneous
- Intramuscular
 - distal ulna
- Intravenous
- Intraosseous
- Nebulization






Nebulization

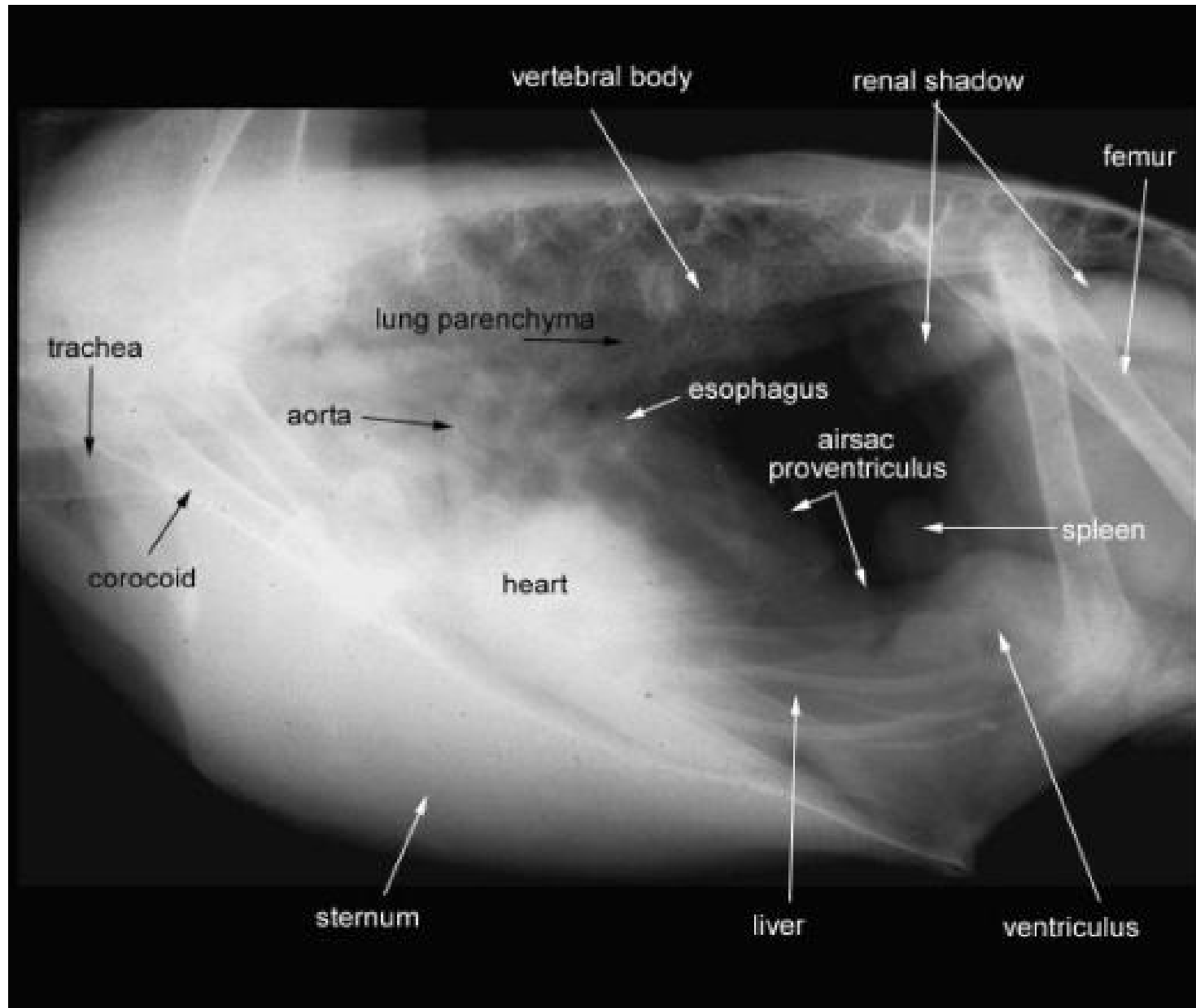
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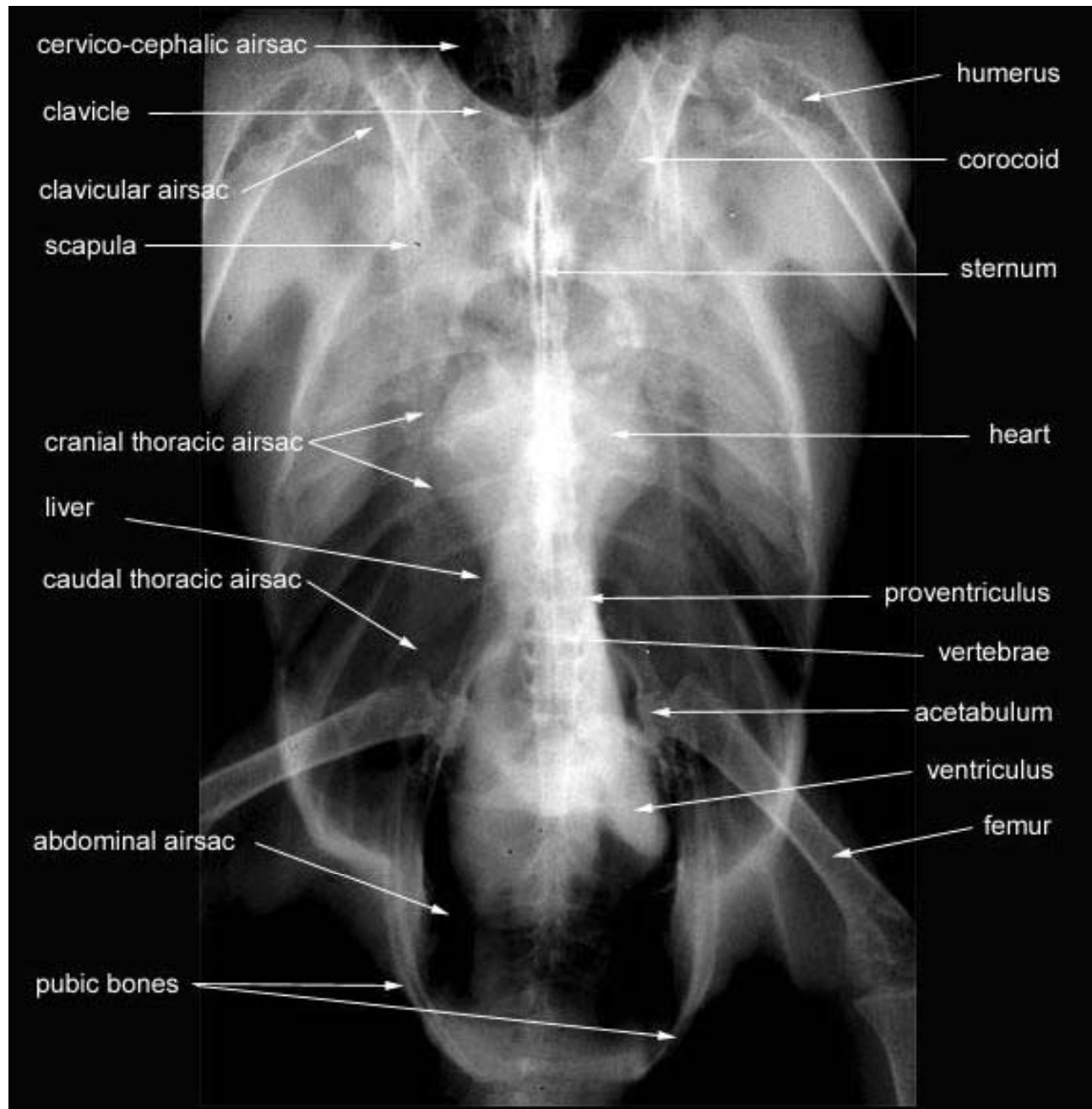





AVIAN
RADIOLOGY

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AVIAN
ANESTHESIA
AND
SURGERY

Avian Anesthesia

Injectable

vs

Inhalation

- Dose response variable
 - Non-reversible
 - Difficult recovery
 - Higher risk
 - Portable
- Predictable response
 - Easily titratable
 - Rapid recovery
 - Much safer
 - Requires machine

Avian Anesthesia

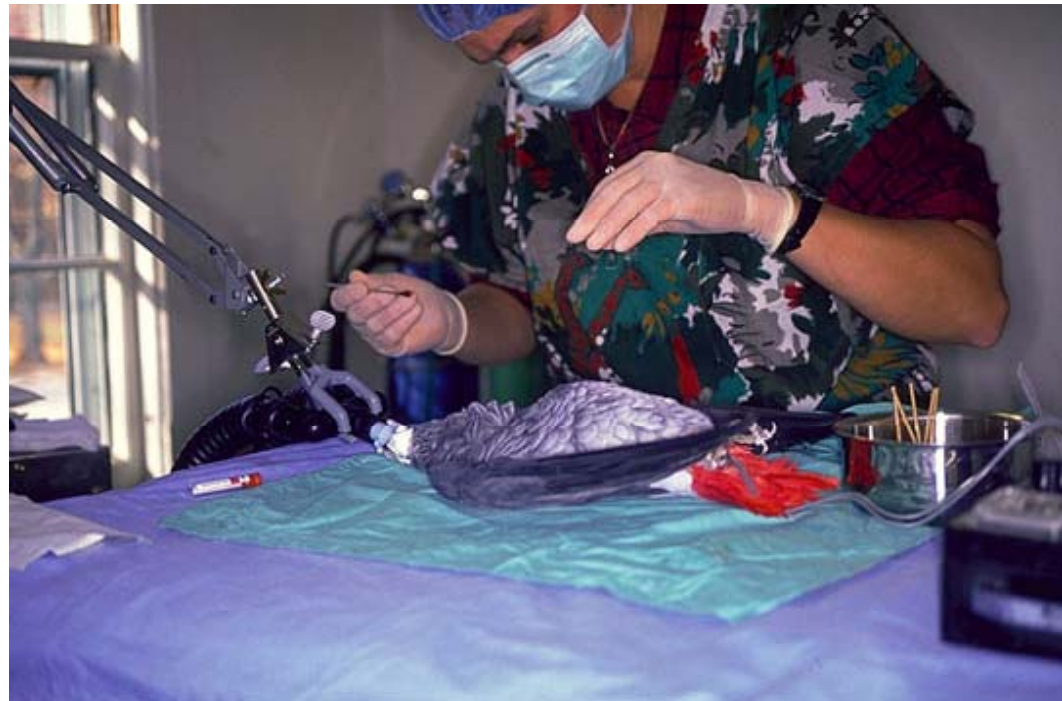
Isoflurane anesthesia

- Mask only procedures 15-20 minutes
- Intubation for longer procedures or if ventilation is needed in short procedures
- Some mechanical/manual ventilation is always required for longer procedures

Sevoflurane also OK, but not much better

Principles of Avian Surgery

- Hemostasis
- Precision
- Speed





Review of Pet Bird DISEASES

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Nutrition

Seed Based Diets

Deficient in:

- Calcium
- Vitamin A
- Iodine
- Essential amino acids

High in:

- Energy
- Fat
- Carbohydrates

Nutrition

Optimal Pet Bird Diet

- Seeds (?)
- Pellets
- Fresh unprocessed foods
- Fresh water



Nutritional Diseases

- Vitamin A deficiency
 - Squamous metaplasia
 - Respiratory tract
 - GI tract
 - Urinary tract
 - Reproductive tract

Vitamin A deficiency

- Diagnosis

- Dietary history
- Clinical signs
- Biopsy?

Choanal papillae?



- Treatment

- Correct diet
- Vitamin A injection
- Surgery if necessary



- Prevention

- Ensure adequate dietary sources of Vitamin A

Nutritional Diseases

- Calcium imbalance (deficiency)

Egg binding

Pathological fractures

Unthriftiness

Hypocalcemia of African Grey

Parrots – **need more UVB!**



Nutritional Diseases

- Iodine deficiency
Goiter in Budgerigars



Nutritional Diseases

- Obesity
 - Hepatic lipidosis



Behavior

Feather picking/self mutilation

- Rule out non-environmental causes of dermatitis

allergic dermatitis

liver disease

intestinal irritation

viral diseases

endocrine disorders

- Diagnosis through history and comprehensive testing
- Treat underlying cause
- Control self mutilation

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Appreciate natural behaviors

Very intelligent social animals

Travel miles between foraging sites

Spend 3-6 hrs/day foraging for food

Seek out huge variety

– 58 species of indigenous plant material

Major Psittacine Viral Diseases

Respiratory system

Paramyxovirus

Amazon tracheitis

Psittacine pox

Hepatobiliary system

Herpesvirus (Pachecos)

Polyomavirus

Adenovirus

Reovirus

Skin

Psittacine pox

Psittacine beak and feather disease

Psittacine polyomavirus

Herpesvirus

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CNS

Paramyxov

Gastrointestinal system

Proventricular dilatation syndrome

Paramyxovirus

Herpesvirus (Pachecos)

Hemolymphatic system

Avian leukosis (?)

Viral Diseases

Psittacine Hepatitis

Common clinical signs

- Anorexia
- vomiting/regurgitation
- Diarrhea
- Change in color of feces/urates

Basic treatment

- Isolation
- Fluid therapy
- Nutritional support
- Lactulose
- Antibiotics

Viral Diseases

Psittacine Hepatitis

- Herpesvirus
- Papovavirus/Polyomavirus
- Adenovirus
- Reovirus
- **Ruleout** Bacterial hepatitis
 - Parasitic hepatitis
 - Chlamydiosis
 - Toxic hepatitis
 - Hepatic lipidosis

Viral Diseases
Psittacine Herpesvirus
Hepatitis

Pacheco's disease

Viral Diseases

Psittacine Herpesvirus Hepatitis

- All psittacines susceptible
- High mortality
- Clinical signs
 - Sudden death, anorexia, depression, yellow diarrhea, systemic signs
- Diagnosis
- Treatment
- Asymptomatic carriers??? **Conures?**

Viral Diseases
Polyomavirus

- Small psittacines “budgie fledgling disease”
“French molt”
- Large psittacines hepatitis

Viral Diseases

Polyomavirus in larger psittacines

- Primarily affects young birds
- Clinical signs
 - sudden death, subQ hemorrhage, GI signs, systemic signs
- Diagnosis
 - antibody titers, PCR
- Treatment and control
 - ✓ Serology on blood
 - ✓ PCR on feces, blood, environment

Viral Diseases

Psittacine Beak and Feather Ds.

- "French molt" in Australian budgies
- Circovirus
- Exposure early in life leads to more severe disease
- Epidermal necrosis (feather dystrophy), bursal and thymic atrophy (immunosuppression)
- Diagnosis and Control
 - PCR on blood, environment
 - Feather biopsy

Viral Diseases

Proventricular Dilatation Syndrome

“Neuropathic gastric dilatation”

“Macaw wasting disease”

- **Clinical signs**

- Wasting
- Regurgitation
- Neurologic signs

- **Diagnosis**

- Radiographs
- Biopsy – myenteric plexis?
- ddx. gastritis, heavy metals, foreign body

- **Treatment**

- Supportive
- NSAIDS
(Celebrex)

ETIOLOGY DISCOVERED:

Bornavirus

NEW

fatal
41

Major Psittacine Bacterial Diseases

Respiratory Diseases

Spontaneous bacterial
disease

Enteric Diseases

Spontaneous bacterial
disease

Systemic Diseases

Avian chlamydiosis

Mycobacteriosis

Bacterial diseases

Psittacine Normal Flora

- Respiratory tract
- Gastrointestinal tract

predominantly gram +

Bacterial diseases

Spontaneous Bacterial Enteritis

- Stress associated disease
- Overgrowth of common commensals

Bacterial diseases

Spontaneous Bacterial Respiratory Diseases

- Stress associated disease
- Overgrowth of common commensals
- Underlying **Vitamin A** deficiency

Bacterial diseases
Mycobacteriosis

M. avium

- Ubiquitous
- *M. paratuberculosis* similarities
- Pre-mortem dx. difficult
- Treatment options
- NOT reportable

M. tuberculosis ~ REPORTABLE

Bacterial diseases
Chlamydiosis

- REPORTABLE DISEASE but
- NOT EXOTIC
- Important zoonosis
- Endemic in the U.S. in captive and wild birds

Review [Compendium on Chlamydia](#)

Chlamydiosis

Characteristics of the organism

- Chlamydophila
 - Chlamydophila psittaci*
- Obligate intracellular bacteria
- Elementary body (infectious)
- Reticulate body (vegetative)

Asymptomatic carrier state

Chlamydiosis

Disease in Psittacines

Acute disease

- upper respiratory/air sacculitis
 - Anorexia
 - Dyspnea
 - Nasal discharge
- hepatitis
 - Anorexia
 - Vomiting
 - Diarrhea

Chlamydiosis

Disease in Psittacines

Chronic disease

- poor feathers
- chronic respiratory problems
- chronic diarrhea



Asymptomatic carriers

- no clinical signs
- intermittent shedding
- may become acutely ill » **sudden death**

Chlamydiosis

Diagnosis

History

Clinical signs

Basic diagnostics

- CBC
- Profile
- Radiographs

Laboratory tests

- Culture
- Serology
- Feces/tissue antigen
- PCR

Postmortem

Don't rely on lab tests alone!

Chlamydiosis

Treatment

- Antibiotics
x 45 days

Tetracyclines:

Chlortetracycline

Oxytetracycline

Doxycycline

Fluoroquinolones

Azithromycin

- Supportive care
- Isolation for at least 5 days

Chlamydiosis

Disease in people

- Incubation 5-14 days
- Fever, cough headache, weakness, fatigue, chills, myalgia, etc.
- Dx. with radiographs, serology
- Antibiotic therapy 7-10 days
- **IMPORTANT to alert physician!!**

Fungal diseases

Candidiasis

- Young unweaned birds “sour crop”
- 2nd to antimicrobial therapy
- Diagnosis
 - history & clinical signs
 - cytology/culture
- Treatment
 - nystatin, ketoconazole, fluconazole

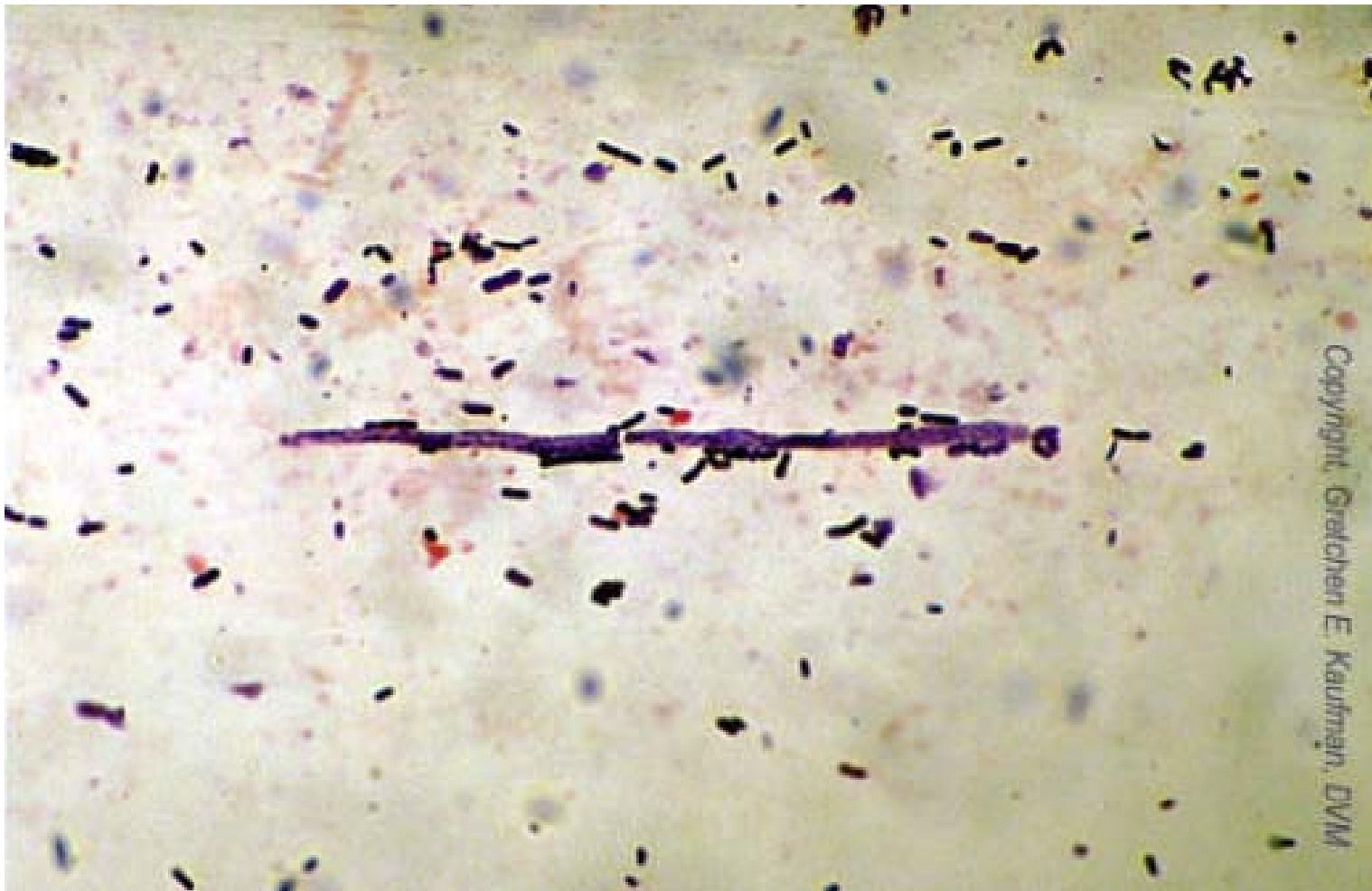
Fungal diseases

Avian Gastric yeast

- Budgies (other psittacines), canaries, finches, ostrich
- Chronic wasting and death
- Attacks **koilin** layer in gizzard
- Tx. With ORAL amphotericin B
- Prognosis guarded

Macrorhabdus ornithogaster

Fungal diseases
Avian Gastric yeast



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Fungal diseases

Aspergillosis

- Sensitive species
raptors, penguins, waterfowl, **psittacines**, poultry
- Secondary to immunosuppression
(e.g. other chronic conditions)
- Secondary to antibiotic usage
- Exposure to high concentrations in the environment

Aspergillosis

Clinical signs

- Air sacculitits, granulomatous pneumonia, rhinitis
- Weakness, anorexia, weight loss
- Dyspnea/exercise intolerance
- +/- Nasal discharge
- Sudden death

Aspergillosis

Diagnosis

- History and clinical signs
- Radiographs
- Laparoscopy
- Serology/protein electrophoresis
 - interpretation problematic
- Cytology/culture

Aspergillosis

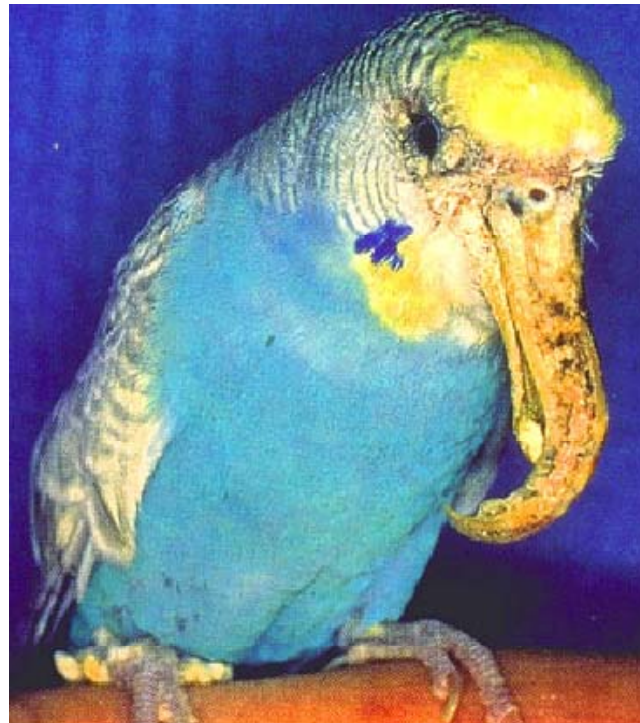
Treatment

- EARLY DIAGNOSIS!
- Amphotericin B + flucytosine
- Itraconazole
- Enilconazole, fluconazole, etc.
- Supportive care
- Prevention?

Parasitic diseases

External Parasites

- Knemidokoptes mites



Parasitic diseases
Other Parasites

Air sac/tracheal mites in Canaries

- *Sternastoma tracheocolum*

Parasitic diseases
Other Parasites

Hemoparasites in wild caught or outdoor birds

- Leukocytozoon
- Hemoproteus
- Plasmodium "avian malaria" in penguins

Toxic diseases

Lead Poisoning

Clinical signs

- anorexia
 - diarrhea or GI stasis
 - vomiting
 - PU/PD
 - hematuria
 - muscle weakness
 - paralysis
 - ataxia
 - blindness
 - seizures
 - death
- **Amazons ONLY**

Toxic diseases
Lead Poisoning

Diagnosis

- history
- clinical signs
- CBC
- radiographs
- blood lead levels

Treatment

- eliminate source
- CaEDTA
- Penicillamine
- Succimer
- **Prognosis?**

Toxic diseases
Zinc toxicosis

- New wire disease
- Galvanized metals
- Clinical signs similar to lead
- Diagnosis
- Treatment - CaEDTA

Toxic diseases

Teflon

polytetrafluoroethylene

Metabolic diseases

Gout

- Uric acid metabolism
- Hyperuricemia
- Visceral gout
- Articular gout



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Metabolic diseases

Diabetes Mellitus

- Budgies, toucans, ducks, others
- Glucagon dependent (+++ α cells)
- Clinical signs typical
- Diagnosis - blood/urine glucose
- Treatment?

Reproductive disorders

Chronic egg laying

- Common in cockatiels/finches
- Consequences
 - Calcium depletion
 - Egg binding
 - prolapse
- Treatment
 - Environmental
 - Hormonal
 - Surgical

Reproductive Disorders

Egg binding

- Common in cockatiels/finches
- Calcium deficiency?
- Diagnosis
- Treatment
 - Heat and moisture
 - Medical – Ca, Oxytocin, PGE, lubrication
 - Surgical

Neoplastic diseases

- Renal & Gonadal Tumors
 - Budgies
 - Unilateral lameness
- Many others....



Passeriformes

(Finches and Canaries)

- Feather cysts
- Egg-binding
- Trauma
- Pox
- Chlamydia resistant?
- Atoxoplasma
- Air Sac mites



Toucans (Ramphastids)



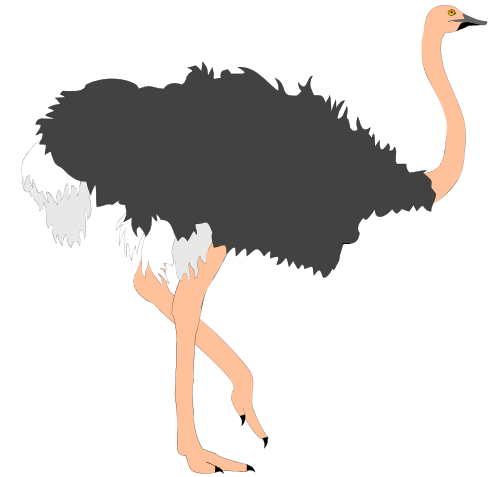
- Dietary management important
- Beak fractures/problems for captive birds
- Hemochromatosis
- Diabetes Mellitus
- *Yersinia pseudotuberculosis*

Pigeons

- Pigeon pox
- Pigeon paramyxovirus (PMV-1)
- Chlamydia
- Candida
- Trichomonas

RATITES

(ostrich, emu, rheas)



- Trauma
- Angular limb deformities
- Foreign body ingestion/impaction
- Eastern encephalitis
- Avian influenza

Waterfowl

- Duck plague, DVE, herpes **REPORTABLE**
- Duck viral hepatitis
- Avian cholera - *Pasteurellosis*
- Botulism
- Aspergillosis
- Lead poisoning
- Bumblefoot



Raptors

- Trauma
- Starvation
- Bumblefoot
- Aspergillosis
- Trichomonas
- Capillaria