TANUVAS Clinical Medicine

Promoting Clinical Excellence …Since 1903…

Clinicat Approach to Common Respiratory Diseases

Dr.P.Selvaraj

Associate Professor

© TANUVAS, 2011

Respiratory Paralysis due to Botulism

- Etiology:
  - *Clostridium botulinum* neurotoxin contaminates food/dead animals
  - Saprophytic, ubiquitous, spore forming
  - Gram +, anaerobic rod
- Pathogenesis:
  - toxin blocks release of Ach
  - Incubation: hrs to 6 days
- Clinical signs:
  - LMN: rear to front, CN affected, +/- respiratory paralysis
  - paraS dysfunction: mydriasis, drooling

TANUVAS
Clinical Medicine

Promoting Clinical Excellence … Since 1903…

© TANUVAS, 2011

Dr.P.Selvaraj

Botulism

- Diagnosis:
  - History and signs
  - EMG: subnormal amplitude of evoked motor potentials, no denervation potentials
- Treatment:
  - Supportive care
  - Antitoxin: only effective before toxin enters cells
- Prognosis: fair if no respiratory paralysis

TANUVAS
Clinical Medicine

Promoting Clinical Excellence … Since 1903…

© TANUVAS, 2011

Dr.P.Selvaraj

Respiratory Failure due to Tetanus

- Etiology:
  - *Clostridium tetani* → Vegetative form → toxin
  - Gram +, anaerobic, spore forming, in soil
  - Produces neurotoxin under anaerobic conditions
- Pathogenesis:
  - Toxin migrates via peripheral nerves to spinal cord
  - Blocks release of GABA & Glycine from inhibitory interneurons (Renshaw cells)
- Clinical signs: localized or generalized
  - Trismus (lockjaw), pain, stiffness, erect ears/tail
  - CN affected
  - Death from respiratory failure

TANUVAS
Clinical Medicine

Promoting Clinical Excellence … Since 1903…

© TANUVAS, 2011

Dr.P.Selvaraj

Tetanus

- Diagnosis:
  - Wound + signs
- Treatment:
  - Drain wound
  - Penicillin + Metronidazole
  - Equine tetanus antitoxin (caution anaphylaxis)
  - Supportive care
- Prognosis:
  - good if mild/moderate dz (recovery takes weeks)
  - guarded if respiratory involvement

TANUVAS
Clinical Medicine

Promoting Clinical Excellence … Since 1903…

© TANUVAS, 2011

Dr.P.Selvaraj

Thoracic effusion due to Nocardiosis

- Etiology:
  - *Nocardia asteroides*
  - Soil saprophyte → opportunistic infection (inhalation, wound)
  - Gram +, aerobic, acid-fast, filamentous bacteria
- Clinical signs: several presentations
  - SQ: wound, fever, abscess (mycetoma)
  - Body cavity: thoracic or abdominal (effusion)
  - Disseminated: lung+SQ+liver+kidney+CNS+bone…
- Diagnosis:
  - Bacteria in pus
  - Culture
- Treatment:
  - Drain abscess
  - Sulfonamides = 1st choice
- Prognosis: fair if localized, poor if disseminated

TANUVAS
Clinical Medicine

Promoting Clinical Excellence … Since 1903…

© TANUVAS, 2011

Dr.P.Selvaraj

Respiratory Tuberculosis

- Tuberculous infection
  - Etiology:
    - *Mycobacterium tuberculosis, M. bovis, M. avium*
    - Acid-fast organisms
  - Clinical signs:
    - Fever, cough, weight loss, V/D, lymphadenopathy, dysphagia
  - Diagnosis:
    - Granulomas in respiratory tract (dogs), or GI (cats), or LN
    - Biopsy or culture of infected tissue
  - Treatment:
    - Euthanasia due to poor prognosis and ZOONOSIS
    - Isoniazid + rifampin + ethambutol for 6-9 months

TANUVAS
Clinical Medicine

Promoting Clinical Excellence … Since 1903…

© TANUVAS, 2011

Dr.P.Selvaraj

Mycobacterial infections

- Nontuberculous infection
  - Etiology:
    - *Mycobacterium lepraemurium* (feline leprosy): rodent bite
    - Atypical mycobacteria: wound contamination
  - Clinical signs: cutaneous & SC nodules
  - Diagnosis:
    - Biopsy & acid-fast organisms
    - Culture is difficult
  - Treatment:
    - Surgical excision of nodules
    - Dapsone or Rifampin

TANUVAS
Clinical Medicine

Promoting Clinical Excellence … Since 1903…

© TANUVAS, 2011

Dr.P.Selvaraj

Respiratory Disease due to Streptococcal infection

- Etiology:
  - *Streptococcus spp.*
  - Gram +, facultative anaerobic, cocci
  - Nonhemolytic strep = normal flora
  - ß-hemolytic strep = pathogenic
- Clinical signs:
  - Fever, UTI, lymphadenopathy, cough, dyspnea, endocarditis, discospondylitis
- Diagnosis: culture
- Treatment:
  - Penicillin, Cephalosporin
  - Ampi or TMS if ß-hemolytic strep UTI
- ZOONOSIS:
  - group A Strep (*S. pyrogenes*) from human to animal

TANUVAS
Clinical Medicine

Promoting Clinical Excellence … Since 1903…

© TANUVAS, 2011

Dr.P.Selvaraj

Respiratory Aspergillosis

- Etiology:
  - *Aspergillus fumigatus*
  - Saprophytic fungus → inhalation
  - Infection facilitated by underlying dz, trauma
- Clinical signs:
  - Nasal infection: chronic rhinitis uni then bilateral
  - Disseminated dz: fever, weight loss, back pain, neuro problems
- Diagnosis:
  - CBC, Chem, UA: ↑ ALP, ↑ TP
  - Cytology & Fungal culture
  - Serology: only to support Dx (not alone)
  - Radiographs:
    - Nasal: turbinate lysis (seen with rhinoscopy)
    - Disseminated dz: diffuse interstitial lung pattern, +/- bony lysis of limb
- Treatment:
  - Nasal: intranasal infusion of clotrimazole or enilconazole → fair prognosis
  - Disseminated dz: itraconazole but difficult → poor prognosis

TANUVAS
Clinical Medicine

Promoting Clinical Excellence … Since 1903…

© TANUVAS, 2011

Dr.P.Selvaraj

Respiratory Blastomycosis

- Etiology:
  - *Blastomyces dermatitidis*
  - Saprophytic fungus → inhalation by young, large breed male dogs
  - Mississippi River Valley; possible ZOONOSIS
- Clinical signs:
  - Pulmonary: fever, chronic cough, weight loss
  - Cutaneous: draining tracts, lymphadenopathy
  - Disseminated: bone, eyes, LN, testes, CNS
- Diagnosis:
  - Non regenerative anemia, stress leukogram, incr. Glob.
  - Cytology: optimal method of Dx; Fungal culture
  - Serology: Agar gel immunodiffusion to support Dx (not alone)
  - Rads: lung nodules, bone lesions (lysis + proliferation)
- Treatment: Amphotericin B, Itraconazole, Ketoconazole
- Prognosis: fair unless CNS; 20% recurrence

TANUVAS
Clinical Medicine

Promoting Clinical Excellence … Since 1903…

© TANUVAS, 2011

Dr.P.Selvaraj

Respiratory Disease due to Coccidioidomycosis

- Etiology:
  - *Coccidioides immitis*
  - Saprophytic fungus → inhalation
  - Semi-arid areas (AZ), young large breed dogs; not zoonotic
- Clinical signs:
  - Pulmonary: fever, cough, weight loss
  - Cutaneous: draining tracts, lymphadenopathy
  - Disseminated: bone, eyes, LN, CNS
- Diagnosis:
  - CBC, Chem same as Blasto
  - Cytology: optimal method of Dx; Fungal culture
  - Serology: to support Dx
  - Rads: interstitial lung pattern, osteoproliferation
- Treatment: ketoconazole, itraconazole
- Prognosis: poor if disseminated, fair if pulmonary

TANUVAS
Clinical Medicine

Promoting Clinical Excellence … Since 1903…

© TANUVAS, 2011

Dr.P.Selvaraj

Respiratory Disease due to Cryptococcosis

- Etiology:
  - *Cryptococcus neoformans*
  - Saprophytic, yeast-like fungus (bird droppings) → inhalation
  - Cats >>> dogs
- Clinical signs:
  - Cutaneous: draining tracts, lymphadenopathy
  - Nasal: chronic discharge, +/- mass
  - Disseminated: eyes, CNS, fever, weight loss
- Diagnosis:
  - CBC, Chem same as Blasto
  - Cytology on pus or CSF: optimal method of Dx; Fungal culture
  - Serology: only to support Dx
  - Rads: turbinates lysis +/- soft tissue density in sinuses
- Treatment: antifungals, but not very effective in dogs
- Prognosis: fair to good in cats, poor in dogs w/CNS dz

TANUVAS
Clinical Medicine

Promoting Clinical Excellence … Since 1903…

© TANUVAS, 2011

Dr.P.Selvaraj

Kennel Cough
Infectious tracheobronchitis

- Etiology:
  - Viruses:
    - CPiV (Canine Parainfluenza Virus; *Paramyxoviridae*)**
    - CAV-2 (infectious laryngotracheitis virus)**
    - CAV-1 (infectious hepatitis virus)
    - Canine Herpesvirus
  - Bacteria:
    - *Bordetella bronchiseptica* (Gram-)**
    - Streptococcus (Gram+)
    - Pasteurella (Gram-)
    - Pseudomonas (Gram-)
    - Coliform bacteria (Gram-)
  - Mycoplasma (no cell wall)**

TANUVAS
Clinical Medicine

Promoting Clinical Excellence … Since 1903…

© TANUVAS, 2011

Dr.P.Selvaraj

Infectious tracheobronchitis

- Clinical signs:
  - Cough +/- rhinitis +/- pneumonia
- Diagnosis:
  - Hx (contagious) and signs
  - Chest radiographs
  - Bacterial culture and virus isolation
  - Serology
- Treatment: symptomatic
  - ABs: Doxycycline, Clavamox, TMS
  - +/- Antitussives
  - +/- Bronchodilators
- Prognosis: fair
- Prevention: vaccines (intranasal for CPiV, Bordetella)

TANUVAS
Clinical Medicine

Promoting Clinical Excellence … Since 1903…

© TANUVAS, 2011

Dr.P.Selvaraj