Geriatric Horse Diseases and Management

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What is a Geriatric Horse?

- Jury is out on what age qualifies as geriatric
  - Researchers - 15 years and older
  - Owners - 23 years and older
- Breed specific age
  - No breed has the "longevity gene"
  - Ponies and Mules - high percentage of animals >30 years of age
  - Smaller body size and originally from areas that require hardier nature

Common Geriatric Ailments

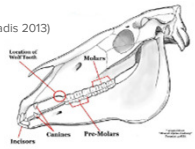
- General "old age" signs
  - Decreased "spontaneous activity"
  - Loss of "top line" muscles - possibly secondary disease
  - Graying hair coat
  - Stiffness
- Most common body systems affected by aging:
  - Gastrointestinal system (GI)
  - Musculoskeletal system
  - Respiratory system

Gastrointestinal

- Colic most common reason for GI issues
  - Intestinal volvulus
  - Displacements
  - Ruptures
- 45% of horses 20 years or older present for large colon problems (Paradis 2013)
  - 40% small intestinal problems
    - 44% of them strangulating lipomas
  - Large colon impactions common
  - Also present are gastric lesions - ulcerations and neoplasia

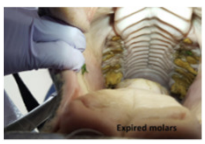
Gastrointestinal - Dental Disease

- Largest reason for large colon impaction and esophageal choke in older horses
  - 95% of horses >15 years have dental abnormalities (Paradis 2013)
  - 15% of owners report their horses exhibiting quidding
- Types of dental abnormalities
  - Smooth mouth
  - Wave mouth
  - Step mouth
  - Hooks
  - Shear mouth
  - Equine Odontoclastic Tooth Resorption and Hypercementosis (EOTRH)



Dental Abnormalities

- Smooth mouth:
  - Occurs over time from normal wear of enamel ridges
  - May be hastened by chronic ingestion of sand or overly aggressive floating practices

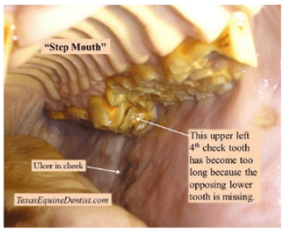


Dental Abnormalities

- Wave Mouth:
  - Uneven wearing of cheek teeth
  - Molars are permanent teeth
    - The upper 4th cheek tooth is the oldest tooth in the mouth
  - Often first to be worn to the gum line with the lower opposing tooth longer creating an arcade that wears and grinds abnormally

Dental Abnormalities

- Step Mouth:
  - Caused by an absence of one tooth and the overgrowth of opposing tooth

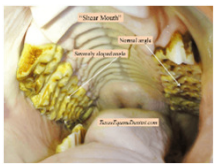


Dental Abnormalities

- Hooks
  - Response to malocclusion of the dental wear and decrease in wearing surfaces
  - Typically first upper cheek tooth and lower sixth cheek tooth

Dental Abnormalities

- Shear Mouth
  - Lingual points of lower teeth come in contact with hard palate
  - Laceration of gums or palate typically occur



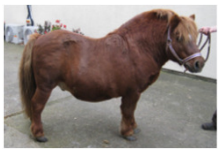
Dental Abnormalities

- Equine Odontoclastic Tooth Resorption and Hypercementosis (EOTRH)
  - Painful disorder of incisor and canine teeth
  - Etiology unknown
    - Possibly related to periodontal inflammation
  - Extraction of affected teeth is treatment of choice
  - Early pain may only be seen with bridling
    - Can severely affect attitude and later on, eating habits

Nutritional Management

Weight and Diet Concerns with a Geriatric Horse

- Most common issues is obesity
- Nutritional requirements may not differ from younger adult
  - Problems arise when the older individuals are not normal
    - Obesity and insulin resistance increase risk for laminitis
    - Decreased ability to digest foods



Types of feed

- Extruded form of feed
  - Increase surface area for feed pellets to be exposed to digestion
- Prebiotic/probiotic increase digestive flora
- Higher protein for decreased muscle mass
- Certain amino acids added, ex. lysine and biotin
  - Help with muscle maintenance, haircoat, and hoof care
- Complete feeds to help horses with poor ingestion of long-stem roughage
  - Poor dentition
- Fat added to increase caloric input

Weight Loss Concerns in an Older Animal

- Decreased intake:
  - Lack of good quality feed
  - Poor appetite - secondary to debilitating disease
  - Maldigestion
  - Malabsorption
- Reasons for increased utilization
  - Environmental (cold/heat)
  - Increased level of exercise
  - Increased catabolism secondondary to debilitating disease
    - Ex. Recurrent airway obstruction (RAO)
      - Increased respiratory rate and effort increase the caloric need
      - May not take time away from breathing to reach caloric need

Weight Loss Concerns in an Older Animal

- Abdominal Neoplasia
  - Lymphosarcoma
  - Squamous cell carcinoma
  - Adenocarcinoma
  - Lieomyosarcoma
  - Melanoma
  - Mesothelioma

- Need diagnostic work up
  - Grain and forage analysis
  - Blood work: CBC/Chemistry panel
  - Rectal palpation/ultrasound exam:
    - r/o abdominal masses or intestinal abnormalities
  - Abdominocentesis:
    - r/o peritonitis
  - Gastroscopy:
    - r/o gastric ulcers and squamous cell carcinoma of stomach
  - Rectal biopsy:
    - r/o inflammatory bowel disease
  - Exploratory laparotomy

Musculoskeletal Disorders of the Geriatric Horse

- Second most common complaint
- Laminitis
- Lameness classified as degenerative disease
  - Navicular disease
  - Degenerative Suspensory Ligament Desmitis
  - Typically seen in straight hock conformation and progressive sinking of fetlocks
- Earlier injury to joints, muscles, tendons, and ligaments can set up for progressive degenerative changes
  - Osteophyte formation
  - Cartilage changes

Respiratory Problems of an Older Horse

- 3rd biggest issue in older horses
- Recurrent airway obstruction (ROA)/heaves seen in all ages, but is a risk factor
  - Inflammatory airway disease similar to asthma in humans
  - Inflammation of the airway plus bronchoconstriction leads to severe obstruction
    - Clinical signs:
      - Increased respiratory rate and effort
      - Cough
      - Development of hypertrophied muscle along ventral rib cage
      - Exercise intolerance
      - Increased crackles and wheezes in the lungs

Respiratory Problems of an Older Horse

- Treatment of RAO:
  - Aimed at decreasing inflammation and bronchoconstriction
- Reduction of environmental allergens is main objective in treatment
  - 24 hour turn out
  - Eliminating hay from diet
  - Improving ventilation
  - Decreasing dust

Respiratory Problems of an Older Horse

- Treatment of ROA:
  - Oral inhaled steroids primary anti-inflammatory drug of choice
    - Systemic drugs: Dexamethasone, prednisolone
    - Inhaled drug: beclomethasone (steroid of choice)
  - Bronchodilation
    - Albuterol (inhaled most effective)
    - Clenbuterol (oral)
    - Aminophylline (oral)
  - Supplements
    - Arenus Aleira
    - Equishield SA
    - Platinum SA

Ophthalmology in the Older Horse

- 94% of horse over 15 years of age have at least one eye abnormality (Paradis 2013)
- Degeneration of vitreous most common
  - Recurrent uveitis
- Senile retinopathy
  - Irregular linear hyperpigmentation in the non-tapetal fundus
  - Depletion of pigment in adjacent areas
- Cataracts
  - 58% of geriatric horses have evidence of cataracts (Paradis 2013)
  - Median age for bilateral cataracts was 25 years of age

Immunosenescence in Older Horses

- Describes the changes that occur in the immune system with advanced age (Mcfarlane 2013)
- Pituitary and adrenal hormones are strong modifiers of immune function
  - Other considerations affecting immune function:
    - Diet, endoparasite load, medications, nutritional supplements, exercise, season, transport, housing, and environment

Immunosenescence in Older Horses

- Total lymphocyte populations decrease in aged horses
  - CD4, CD8 and B-cells
    - CD4 are helper T-cells and CD8 are killer T-cells
    - B-cells are memory cells producing antibodies
- Decreased ability of lymphocytes to proliferate
- Decreased neutrophil function
  - Increased frequency of bacterial diseases, such as abscesses and sinusitis

Immunosenescence in Older Horses

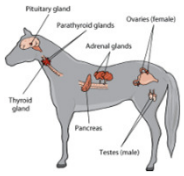
- Vaccine responsiveness
  - Decreased ability to develop adequate titers after vaccination
  - Influenza infection greatest with aged horses
    - Less robust reaction to the vaccine
  - Decreased IgGα and IgGβ
- Increased risk of neuropathic equine herpes virus (EHV-1) infection
- Important to minimize infectious risk by a complete and appropriately administered vaccine schedule

Endocrine Disorders

- Most common:
  - Pituitary pars intermedia dysfunction (PPID or equine cushing's)
  - Equine metabolic syndrome (EMS)
    - Insulin dysregulation
      - Hyperinsulinemia
      - Insulin resistance (IR)

Pituitary Pars Intermedia Dysfunction (PPID)

- A slowly progressive degenerative disease of the hypothalamic dopaminergic neurons
  - Leads to hyperplasia and adenoma formation of the pars intermedia
- 20% of horses over 15 years of age have PPID
- No apparent breed or sex predilection



PPID

- Clinical Signs:
  - Hypertrichosis
  - Loss of topline musculature
  - Hair color changes and patchy shedding
  - Chronic laminitis
  - Suspensory ligament breakdown


Pathognomonic Hypertrichosis


Loss of Topline Musculature


Hair Color Changes & Patchy Shedding


Suspensory Ligament Breakdown


Chronic Laminitis

PPID

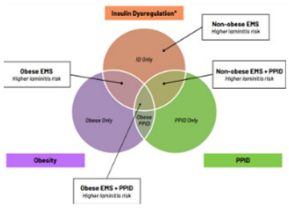
- Diagnosis:
  - Bloodwork looking at adrenocorticotropic hormone (ACTH) concentrations
    - Interpretation at baseline and after stimulating
    - ACTH concentrations increase in autumn of healthy and PPID animals
    - Outside of natural stimulation season, requires looking at ACTH levels after TRH stimulation

PPID

- Treatment:
  - FDA approved Prascend (1mg pergolide)
  - Compounded pergolide (may require a higher dose to control PPID)
  - Can have increased ACTH concentration by 48 hours after a missed dose
  - Diet and exercise
    - Assessment of body condition score
    - Assess for concurrent EMS
  - Stress, excitement and trailering can cause transient increase in ACTH levels
    - Laminitis can also increase ACTH concentrations
    - Wait 30 minutes prior to testing after trailering/excitement
    - Wait 24 hours after painful event prior to testing

Equine Metabolic Syndrome (EMS)

- Collection of risk factors
  - Obese 6-9/9 BCS/regional adiposity
  - Hyperinsulinemia - associated laminitis (HAL)
  - Insulin dysregulation (ID)
- May coexist with PPID, exacerbating ID
- Interaction between genetic and environmental factors
- Pasture associated laminitis (HAL)
  - Sugars and fructans in pasture increase blood insulin concentrations
- Clinical signs
  - Obesity
  - Stretching of digital lamellae due to sustained hyperinsulinemia



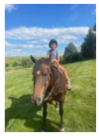
Equine Metabolic Syndrome

- Tests:
  - Baseline blood insulin levels
    - No grain given in last 12 hours
    - If clinical signs are present and baseline is normal range, recommend dynamic testing due to low sensitivity
  - Oral sugar test (OST)
    - Baseline insulin (3-6 hours fasting prior to test)
    - Collect blood at 60 and 90 minutes post oral corn syrup administration
    - Measure insulin and glucose
  - Insulin tolerance test (ITT) - doesn't require fasting
    - Collect baseline blood glucose
    - Measure glucose levels 30 minutes after administering insulin
      - Insulin is costly
      - Risk of hypoglycemia
      - Need to monitor patient during and after test

Patient Example

Plasma, Edta		
TRH Response: ACTH	Pre: 35.8 pg/mL	7 - 30
	Post: 565 pg/mL	7 - 110
Serum		
Insulin Baseline Equine	49.26 uU/mL	10 - 40

- Gelding
- Age: 22 yrs
- Clinical signs:
  - Increased body fat deposition
  - Recurrent lameness has been a previous issue
- Test ACTH and baseline insulin
  - PPID present
  - Mid range insulin levels
    - Suspect increase in insulin due to PPID
- Plan:
  - Start on Prascend
  - Monitor for ID
  - Can do a dynamic test to confirm ID once PPID is regulated

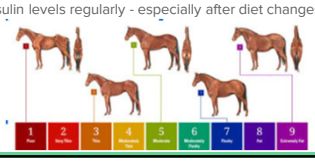


Equine Metabolic Syndrome

- Diet
  - Restricted grazing - may need to eliminate all together if severe ID
  - Feed grass hay with low non-structural carbohydrates (NSC) contents
    - NSC analysis of hay is recommended
  - Good quality straw can be fed as a low - NSC forage for up to 50% of the daily feed provided for obese horses
    - **straw must be introduced into the diet gradually and monitor closely for colic**
      - GOOD QUALITY STRAW ONLY
  - Soaking hay in cold water for at least 60 minutes before feeding to lower water-soluble carbs
  - Feeding hay in slow feeder or divide forage into smaller meals to avoid prolonged fasting
  - Provide mineral/vitamin/protein balancer
    - One low in sugar

Equine Metabolic Syndrome

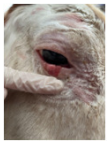
- Monitor body condition score regularly
  - Reassess every 30 days
- Exercise is recommended unless laminitis is present
  - Can increase weight loss and improve insulin sensitivity
- Decrease stress
- Monitor insulin levels regularly - especially after diet changes



Equine Metabolic Syndrome

- Medication
  - Thyro- L (Levothyroxine)
    - Help increase weight loss in obese horses
  - Sodium-glucose co-transporter 2 (SGLT2) inhibitors
    - Severe ID and laminitic horses when not responding to other therapies
  - Glucophage (Metformin hydrochloride)
    - For persistent hyperinsulinemia, may only be effective for small amount of horses and lose efficacy over time
  - Nutritional supplements including chromium, resveratrol, and magnesium

Neoplasia



- Squamous Cell carcinoma and melanomas
  - Increase in occurrence with age
- Squamous cell carcinoma most prevalent
  - Eye, Prepuce, Penis
  - Masses may be singular or multiple
  - Lighter, non-pigmented skin more susceptible
  - Metastasis can occur to local lymph nodes
  - Preputial lesions metastasize to corpus cavernosum penis and inguinal lymph nodes
- 80% of older gray horses have external melanomas
  - Rarely metastasize

Extending or Ending Life

- Older horses can lead healthy lives well into their 30s if well taken care of and medical issues addressed
- Annual or biannual geriatric assessment necessary to identify treatable problems
- Increase quality of life by
  - Reducing pain
  - Improving nutrition
  - Relieving stress
    - Chronic airway problems
    - Endocrine problems
- Factors that affect euthanasia
  - Hopeless prognosis/poor quality of life
  - Veterinary advice
- Physical exam
  - BCS
  - Dental wear
  - Appetite
  - Presence of of long hay fibers or whole grain in manure
  - Hair coat abnormalities
  - Musculoskeletal stiffness or lameness
  - Ophthalmic abnormalities
  - Development of cardiac murmurs
  - Bloodwork
    - Complete cell count
    - Chemistry profile
    - Adrenocorticotropic hormone levels (ACTH)
    - Insulin levels
    - Fecal examination of parasites

Questions?

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