Zuku Review FlashNotes™

Equine Colic

Extended Version

Classic Case – Acutely painful horse, flank watching, pawing, up and down, +/- rolling, ↑ HR, ↓ borborygmi (gut sounds), ↓ feces, & ↓ appetite

Presentation:

Behavioral signs : pain
- Sweating
- Restless, pawing
- Flank watching
- Biting at flanks
- Kicking at abdomen
- Recumbent, won't get up
- Up and down
- Rolling

Behavioral signs - Malaise
- Eyes dull
- No interest in **ANYTHING**
- Ears floppy – "helicopter ears"

Cardiovascular signs
- Tachycardia
- Abnormal tissue perfusion
- Shock in severe cases
- Occasionally arrhythmias

Other
- ↓ Appetite
- ↓ Fecal output
- Fecal balls small/ dry
- Diarrhea

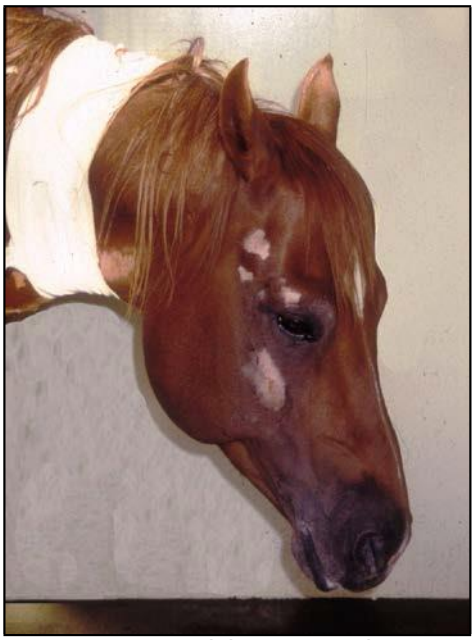
Painful yearling

Test(s) of choice:

History
- Recent transport
- Feed change; lack of water – frozen in winter, not enough in summer
- Recent or concurrent illness
- Activity – training, type/frequency of riding, etc
- Pregnancy, parturition
- Weather/climate

Management
- Housing – pasture vs stall
- Turnout – hours per day
- Number of horses, ages; other animals present
- Feed – roughage vs concentrate, supplements

Physical exam
- **How much PAIN**??
- **Heart rate** – **count BEFORE sedation**
- **Mucous membrane color**, capillary refill time - perfusion
- Pulse strength – vascular volume and tone
- **Gut sounds** – **Are they decreased?**
  - 4 quadrants – upper/lower areas both flanks
  - Cecum - characteristic "plink"
- **Pass nasogastric tube** – **Is there reflux fluid?**
  - Color, smell, pH (stomach acidic, SI alkalotic)
  - Pass tube ASAP if fluid draining from nose!!



Trauma around the eyes and ears - common when horses have been rolling due to extreme pain

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Test(s) of choice: (continued)

- **Rectal exam** – ensure good restraint
  - GI distention – SI/LI/both – gas/ingesta
  - Organs out of place – bands on lg/sm colon
  - Cecal distention; location of spleen
  - Must know normal!

Mild colic; note stretched out stance, flat ears, UNHAPPY HORSE

Abdominocentesis

- Color, turbidity
- Feed contamination – GI rupture / enterocentesis
- Cell count / Protein level
- Cytology
  - Inflammation – PMNs, toxicity
  - Presence of microbes

Clinical Pathology

- **PCV or Hct, **Total Solids/Total Protein
- CBC
- Chemistries
  - **BUN, Creatinine – pre-renal, renal azotemia
  - **Albumin
  - **Electrolytes
  - Ionized Ca, Mg – often decreased
  - Hepatic function
    - GGT, SAP
    - Bile Acids
- Blood gases
  - Metabolic alkalosis common with colon displacements
  - Metabolic acidosis – dehydration and damaged/ischemic bowel
- Lactate
  - ↑ with hypovolemia (dehydration, hemorrhage), and tissue damage
  - Persistent ↑ poorer prognosis

These parameters should **increase with hemoconcentration or dehydration;
If low or less than expected, look for fluid and/or protein loss due to ischemic or inflamed bowel, occasionally hemorrhage

Minimum database for emergency surgery**:**

★PCV, TS
★WBC w/ differential
★Creatinine
★ Na, K, Cl, Calcium

Radiology – enteroliths on abdominal films; smaller horses only

Ultrasound of abdomen

- Distention – identify location, nature – ileus vs. obstruction vs. enteritis
- Bowel thickness -
- Identify displacements – nephrosplenic entrapment, etc.

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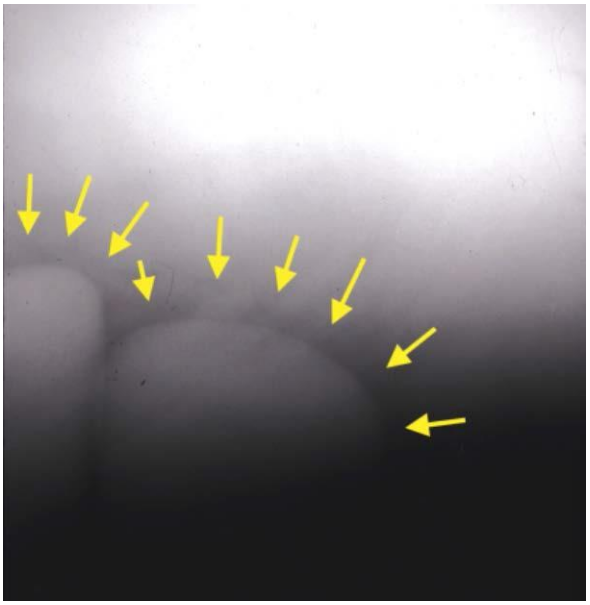

Enteroliths above from three different horses; largest was over 12 pounds!
Radiograph on right shows at least two enteroliths

Differential Dx:

Disease of virtually every body system may present as colic at first!!

Spasmodic colic	Simple Obstruction	Inflammatory	Extraintestinal
Gas distention SI, LI, or both Can be VERY painful Med Tx usu works	**Impaction** ▪ Sand - regional ▪ Ingesta Ileal impaction Meconium - neonates	**Colitis:** Eosinophilic Lymphacytic/plasmacytic Salmonella (typhlitis also) Parasitism Thrombo-embolic Colitis X Potomac Horse Fever	Cholestasis/cholangiohepatitis Choleliths Liver lobe torsion Myocardial failure (hypotension/ischemia GIT) Parturition/Abortion Uterine torsion
GI Ulceration: Stomach/duodenum ▪ horses in training Colon (RDorsal) ▪ +/- hx NSAIDs use	Large Colon Displacement Fecolith – minis Enterolith – adults, regional Foreign body - juveniles	**Enteritis:** Eosinophilic Lymphacytic/plasmacytic Anterior or proximal Parasitism *Lawsonia intracellularis*	Neoplasia ▪ Lymphosarcoma ▪ Adenocarcinoma Uroliths
Other: ▪ Adhesions ▪ Ileus	**Strangulating Obstruction** Lipoma Mesenteric rent Gastrosplenic entrapment Epiploic foramen entrapment SI Volvulus Inguinal hernia ▪ Stallions, TWH Intussuception Colon torsion LI volvulus Ceco-colic intussuception	**Peritonitis** **Abdominal abscess** ▪ Rhodococcus ▪ Strangles and others	Pleuropneumonia Myopathy Laminitis Anaphylaxis

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Rx(s) of Choice:

FIRST, determine if you can –Is it a gastrointestinal colic, or a NON-gastrointestinal colic?
SECOND: Is it a colic you will treat **Medically** or **Surgically?**

Surgery YES

- **PAIN** – unresponsive to meds, severe
- Rectal palpation – abnormal finding
- Persistent tachycardia, HR **>>** ↑
- Severe distention
- Abdominocentesis
  - Serosanguineous
  - High protein and cell count
- Large volume reflux; alkaline

Surgery NO

- Colitis/diarrhea
- Neutropenia or severe neutrophilia
- Odorous, brown-red reflux*
- Fever*
- Evidence of primary liver disease

*Surgical colics are occasionally febrile and may have bloody reflux

The decision to take a horse to surgery is a **judgment call**, based on a combination of factors

Pain or an abnormal rectal finding are 2 factors that can be used alone.

Medical therapy (surgical colics may get any/all of this AND surgery)

Pain control	Fluid therapy	IV Fluid Therapy
• NSAIDs ▪ Flunixin meglumine ▪ Phenylbutazone ▪ Ketoprofen, Meloxicam • Alpha 2 agonists ▪ Xylazine ▪ Detomidine • Opioids ▪ Butorphanol ▪ Methadone, etc • Continuous infusion(s) ▪ Lidocaine ▪ α2 agonist ♦ Usually detomidine ▪ Opioids ♦ Morphine, butorphanol ▪ Combinations • Decompress stomach ▪ q 1-2 hr if refluxing • Spasmolytic**:** ▪ N-butylscopolammonium bromide (Buscopan®)	• Enteral +/or IV (IV only if refluxing) • Correct dehydration • Treat impaction obstruction • Stimulate motility • Treat shock **Enteral fluid therapy** • **WATER** +/- electrolytes • Laxatives**:** • Osmotic or saline type ** ▪ Na sulfate – Glauber's salts ▪ Mg sulfate – Epsom salts ▪ Mg hydroxide - Carmilax • Surfactant ▪ Dioctyl Na Sulfosuccinate (DSS) ▪ Irritating to mucosa; only q 48 hr • Bulk type ▪ Psyllium – esp for sand, w/Min oil • Lubricant type • Mineral oil ▪ Does **not** soften ingesta • Irritant cathartics – not recommended	• Balanced electrolyte solution ▪ Lactated ringers ▪ Plasmalyte ▪ Normosol, etc • Colloids – Hetastarch, Dextran, etc • Hypertonic saline • Calcium Gluconate **Anti bacterial/anti-endotoxin Tx:** • Antibiotics • Flunixin meglumine • Antiendotoxin serum • Polymyxin **Tx Ischemia:** • Dimethyl sulfoxide (DMSO) • Pentoxifylline **Other:** • Anthelmentics ▪ Larvacidal dose • **NO FOOD** until**:** ▪ Pain is gone many hrs ▪ Drugs worn off ▪ Passing feces

**Careful with doses of $MgSO_4$ in impactions – hyperMg is reported - weakness and recumbency; too much Mg absorbed when bowel is not motile; MgOH – may see alkalosis -can slow motility, $NaSO_4$ can produce hypernatremia. Lidocaine is very useful in painful horses; thought to have prokinetic, anti-inflammatory, and analgesic effects.

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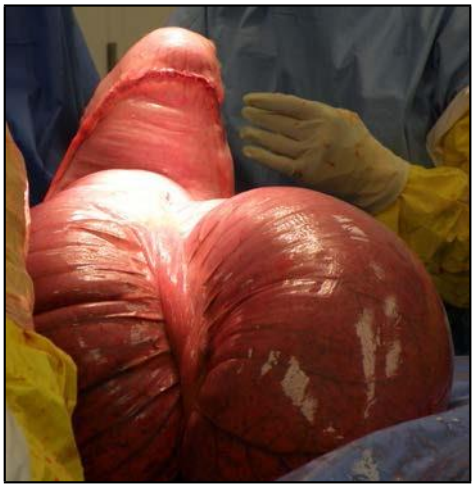
Prevention:

- Good quality hay/pasture
- Appropriate ratio roughage/concentrate; correct type of grain
- **Most horses do not** need much grain
- Regular turnout – as much as possible; consistent exercise
- Deworming according to parasite load, age, environmental burden
- Avoid coastal Bermuda hay - ileal impactions (esp. SE USA)



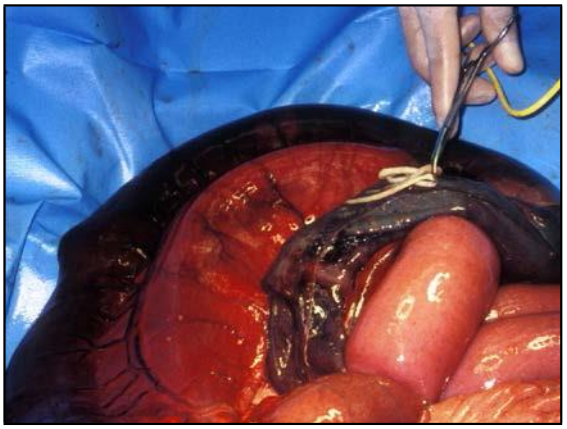
Colon displacement w/ gas distention of cecum

Prognosis:

Excellent for most medical colics
Good for Lg colon displacements without tissue compromise
Guarded- **strangulating lesions**, **large resections**, **much compromised bowel**
Grave for colon torsion unless surgery performed w/in a few hrs

Outcome depends on the **complications** & **severity**

- Peritonitis
- Ileus – prolongs hospitalization, ↑ cost
- Incisional problems – infection/hernia
- Adhesions
- Laminitis
- Gastric/intestinal rupture; rectal tear



Ascarid impaction in a yearling with severely damaged bowel.

Pearls:

Horses on pasture 24/7 develop colic much less than any other

Surgical outcomes have improved dramatically – better surgical and anesthesia techniques and equipment, education of owners, better Tx and earlier referral by DVMs.

If REALLY painful - Get initial info – HR, GI sounds, mm color/CRT; then administer sedative/analgesic and wait a few minutes to work – get more Hx while you wait; then go on to rectal/pass NG tube, etc.

Good restraint during rectal exam very important

- Ensure good exam
- Minimize risk of injury to you and horse
- Minimize liability

Be Careful / Be Safe
colicky horses can be dangerous – watch yourself AND the owner/others in area

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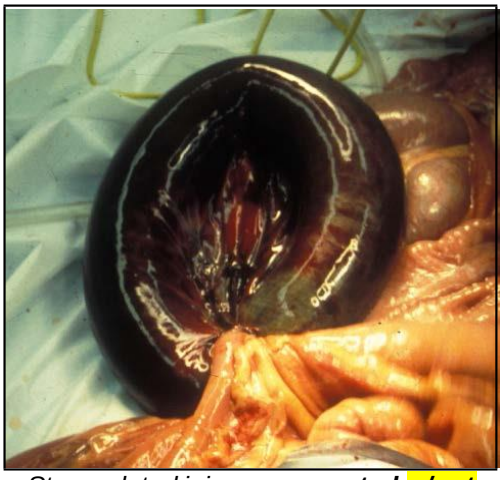
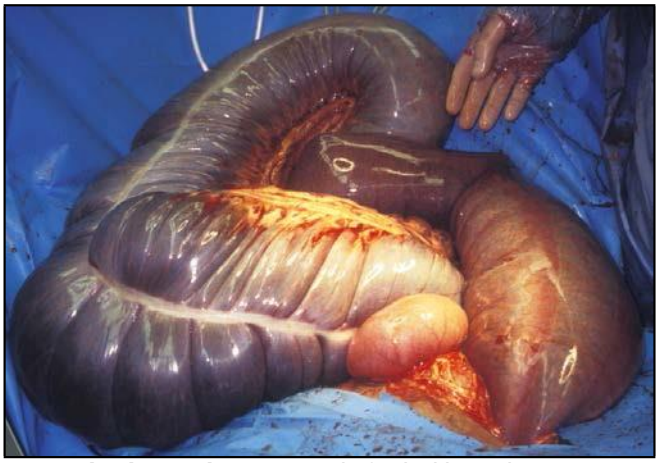
Enteral therapy works quite well – **water (+/- electrolytes) IS about the best stool softener available, inexpensive, and readily available!** The gastrocolic reflex will be at work as well with oral treatment – distend stomach with volume, the colon contracts.

Refer SOONER rather than later if surgery is an option for owner;
Colon torsion - very quickly life threatening, **refer for surgery immediately**.

Don't forget to ask about medical/mortality insurance – need permission from company for insured horses.



Strangulated jejunum; ***resected w/out untwisting*** *to avoid rush of inflammatory mediators (****endotoxins****)*



Colonic torsion *- recently foaled broodmare; resection is required for this horse to survive*

Refs: Large Animal Internal Medicine, B. Smith pp. 108-111, Manual of Equine Emergencies, Orsini and Divers pp. 188-199, Blackwell's 5 Minute Consult: Equine, 2nd ed., pp. 30-1, and almost the whole GI section. Overview of Equine colic and Diseases associated w colic by anatomic location, Merck Vet Manual online (10thed), Images courtesy Dr. JG Adams

My Notes: