It's alimentary my dear nurse
Ann Morrill
03.03.2015

AIMS
• To review the A&P of the alimentary canal.
• To examine how abnormalities / disease process affect the system.
• To have an understanding of the treatment and interventions required to support the child.

The Alimentary Canal / Digestive System
Slide 4

Digestive System

Slide 5

The Gastro Intestinal Tract

Slide 6

Gut Flora

• Changes from area to area
• Each section has a different pH to help kill harmful bacteria.
• Different bacteria have evolved to live in extreme conditions e.g. Helicobacter Pylori in the stomach is associated with gastritis, ulcer formation and carcinoma.
Slide 7
Gut Flora

Slide 8
Abdominal Quadrants

Slide 9
Acute Abdomen
Characterised by:
• Abdominal pain, usually severe, may be spasmodic or constant, may be localised or general.
• Guarding and possible distension
• Vomiting – particularly bile stained or faecal fluid (late sign).
• No or minimal bowel sounds
Muscle Guarding

- Initially this is a reflex action to protect against pain – particularly when being examined
- Later the peritoneal afferent nerves are affected by increasing inflammation, becoming hypersensitive – rebound test
- Muscles becomes so rigid breathing is affected. Shallow, rapid, painful breaths.

Acute Abdomen

Causes - Many, varied and can include:
- Appendicitis
- Pancreatitis
- Obstructions
- Perforation
- Peritonitis
- Spontaneous Bacterial peritonitis in Ascites

History

- Acute /Chronic
- Differentiate –Surgical / Non surgical
- Describe pain
- Vomit
- History of constipation
- Signs of jaundice
- Weight Loss
Slide 13

Vomiting
- Gastro enteritis
- Gastro oesophageal reflux
- Pyloric stenosis
- Systemic illness

Slide 14

Worrying Signs
- Bile stained - particularly in the neonate.
- Blood stained
- Drowsiness
- Refusal to feed
- Dehydration

Slide 15

Investigations
- pH Studies
- Ultra Sound
- X Ray – Barium studies
- Endoscopy
- ERCP
- Colonoscopy
Peritonitis

- Inflammatory response to bacterial contamination from the gut.
- Usually due to gut perforation, but can be spontaneous e.g. in ascites.
- Presents with pyrexia, acute pain and symptoms of 'acute abdomen'.

Pyloric Stenosis

- A condition where the circular and longitudinal muscles of the pyloric sphincter hypertrophy causing narrowing of the canal.
- Presents as progressive non-bilious vomiting, which may become projectile. Coffee ground vomit may occur due to gastritis or Mallory-Weiss tear at the gastro-oesophageal junction.
- Vomiting may be intermittent or occur after each feeding.

Pyloric Stenosis

- The infant feels hungry most of the time.
- Weight loss
- Dehydration
- Lethargy
- In severe cases, the child may develop symptoms of protein malnutrition.
- Jaundice is observed in approximately 5% of infants.
- Decreased urinary output
Pyloric Stenosis

- Epigastric distention
- Visible gastric peristalsis
- In 60-80% of babies, a firm, non tender, mobile 1-2 cm hard mass, (known as an olive), may be present in the mid epigastrium to the right of the midline and is best palpated after the infant has vomited and when calm.
- Ultrasound will show the thickened sphincter.
Pyloric Stenosis

Treatment
• Correction of dehydration
• Surgical intervention - Rammstedt pyloromyotomy – The muscle layers are split down to the mucosal layer allowing the canal to open.

Laparoscopic surgery
The Pancreas

Oesophagus

Ileum

Pancreatitis

Causes

Acute trauma
Secondary to trauma
Gall Stones
Post ERCP
Alcohol
However mostly idiopathic

Pancreatitis

• Apart from mechanical reasons such as gall stones, the exact causes of pancreatitis are not known.
• One theory is that the proteolytic enzymes are activated within the pancreatic cells causing inflammation and damage.
• It is a self limiting process in approximately 80% of cases.
• 15 – 20% develop fulminating pancreatitis leading to necrosis, cytokine release and multi-organ failure.
Pancreatitis
- Presents as acute upper epigastric pain with nausea and vomiting.
- Abdominal distension and tenderness is common in severe attacks.
- ALT / AST will be up to 3 times normal.
- Serum amylase will be raised typically >330U/l. May be a misleading sign as this will typically return to normal within three days.

Severe pancreatitis
- Will require TPN if condition is severe as feeding will be impossible for an extended period.
- Will require follow up to try and establish any cause that can be treated e.g. common duct or gall stones.
- Necrotising pancreatitis has a 70% mortality risk.

Oesophageal Varices
- Varices are caused by blood being shunted from the portal system to the systemic circulation via small collaterals.
- These are sub mucosal veins in the oesophagus and gastro – oesophageal junction.
- Classified from I – IV
- Grade III / IV have a diameter greater than 5mm and are at greatest risk of bleeding.
Slide 31

Oesophageal Varices

- [http://www.youtube.com/watch?v=V4DV0rPvx0w](http://www.youtube.com/watch?v=V4DV0rPvx0w)
- [http://www.youtube.com/watch?v=TpYJHRFvEkw](http://www.youtube.com/watch?v=TpYJHRFvEkw)

Slide 32

Variceal Bleeds

- HAEIMATEMASIS & MALENA
- Assess amount of blood loss
- Assess for hypovolaemic shock
- Tachycardia
- Increased respiratory rate
- Reduced systolic BP (age appropriate)
- Pale, clammy, mottled or possibly cyanotic skin
- Reduced urine output
- Reduced bowel sounds
- Increased anxiety

Slide 33

Congenital Abnormalities

- Omphalocele
  - [http://www.caitlynsstory.com/medical.htm](http://www.caitlynsstory.com/medical.htm)
Congenital Abnormalities

- Gastrochisis
- This is the same as Omphalocele but it is not covered with skin
- Can be diagnosed by ante natal scan

Left Ultrasound

Gastrochisis

Right Peel covering the bowel

Gastrochisis with minimal peel

Treatment
Slide 37

**Obstructions**

- May be caused by anything that actively obstructs the passage of fluids and solids through the intestine.
- May be a mechanical process (e.g. strangulated hernia, volvulus or adhesions) or inflammatory (e.g. appendicitis, Crohn’s disease or ulcerative colitis)

---

Slide 38

**Intussusception**

- A condition where the gut telescopes into itself, causing an obstruction.
- Symptoms are of intermittent severe colicky pain, during which the child becomes very pale and draws his knees up.
- May have a visible mass in abdomen
- Vomiting
- Stools may be positive to FOB initially but later resemble red current jelly (in 60% of children)

---

Slide 39

**Intussusception**

- Occurs most often in children between 5 and 10 months of age (80% occur before a child is 24 months old)
- Affects between one and four infants out of 1,000
- Is three to four times more common in boys than in girls
Intussusception

Slide 41

Child may become shocked very quickly due to pooling of fluid in the gut. Requires fluid resuscitation, naso gastric tube and close observation. Perforation may occur indicated by raise in temperature and white cell count, generalised guarding of the abdomen and signs of septic shock.

Investigations will include Abdominal X Ray and Ultra Sound

Treated by rectal air insufflation or Barium enema if no signs of peritonitis. 10% will recur within 72 hours.

Surgical intervention.

Slide 42
References


