

## 1 I Have a Tummy Ache!

- The Evaluation of Abdominal Pain in the School-Aged Child

## 2 Abdominal Pain

## 3 Abdominal Pain

- Medical Evaluation
  - Detailed History, Child and Parent
    - Child's age and general health
    - Location, duration, quality
    - Associated symptoms
  - Full Physical Exam
  - Laboratory and X-ray
  - Subspecialist Consultation

## 4 Abdominal Pain

- School Nurse Evaluation
  - History (probably only from child)
    - Child's age and general health
    - Location, duration, quality
    - Associated symptoms
  - Limited Physical Exam
- OK vs Not OK?
- Back to Class? Call Mom? EMS?

## 5 Abdominal Pain

## 6 Case 1

- 8 year old girl with many missed school days and frequent visits to nurse's office for stomachache
- Pain is always central, indicated by holding her hand over mid-belly
- T 98.4, HR 80, RR 16, BP 110/65
- Usually feels somewhat better after lying down in office for awhile, returns to class

## 7 RAP

### Recurrent Abdominal Pain

- Peak 8-10 years, more often girls
- "Overachievers", anxious, worried
- Generally no other symptoms referable to abdomen except pain
- Vital signs, physical findings, growth and health are normal
- No nighttime symptoms
- Tends to worsen over time in a "Mind-Body Vicious Cycle"

## 8

- Medical Evaluation
  - Diagnosis of EXCLUSION
    - No organic cause 90-95% of RAP

- UTI, constipation, malabsorption, dyspepsia, lead, others
- Treatment
  - Pain is Real but not Dangerous
  - Psychosocial Approach
  - Encourage School Attendance

## 9 Case 2

- 11 year old usually healthy boy
- Sent to nurse in morning for stomach ache since last night
- T 99.8, HR 90, RR 18, BP 105/75
- Points to belly, feels better after lying down, goes back to class
- Returns after lunch, didn't eat, vomited, holding right lower side
- T 101.4 HR 124 RR 18 BP 138/90

## 10 Appendicitis

- Lifetime Incidence 6/100
- Most common in teenagers
- Obstruction, inflammation, infection of the appendix
- Symptom progression
  - Vague central pain
  - Nausea/vomiting, fever, anorexia
  - Right lower quadrant pain

## 11 Appendicitis

- Medical Evaluation
  - CBC, other abdominal labs
  - X-rays of abdomen and chest
  - Ultrasound or CT
- Treatment
  - Surgical removal of appendix

## 12 Case 3

- 7 year old girl vomits in class
- Holds hand over middle of belly
- T 100, HR 100, RR 16, BP 105/65
- Vomits more in nurses office then has some yellow watery diarrhea
- Call home, mom reports 3 year old brother sent home from daycare with vomiting and fever

## 13 Gastroenteritis

- Most commonly viral etiology
  - Rotavirus, Adenovirus, Norwalk
- Symptom progression
  - Nausea and vomiting
  - Crampy diffuse abdominal pain
  - Fever
  - Diarrhea

## 14 Gastroenteritis

- Medical Evaluation
  - Assessment of hydration status
  - Occult blood (guaiac) stool
- Treatment
  - Supportive care – no medicine
  - IV fluids if dehydrated

## 15 Case 4

- 14 year old healthy boy
- Comes to nurse's office with left lower abdominal pain
- When asked to point to where pain is, just states "down there"
- T 98.6, HR 120, RR 16, BP 158/90
- Looks extremely anxious and uncomfortable

## 16 Testicular Torsion

- Incidence 1/4000
- Peak in teenagers, average 14
- Testicle rotates on spermatic cord, cutting of blood supply
- Symptom progression
  - Vague unilateral aching
  - May perceive as abdominal pain
  - Rapid development of severe pain and swelling within hours

## 17 Testicular Torsion

- Medical Evaluation
  - Examination of testicle
    - Epididymitis, Torsed appendix testis, trauma
  - Ultrasound
- Treatment
  - Surgical detorsion
  - 80–100% success if operated early

## 18 Case 5

- Kindergartener back to school after viral illness last week
- Sent to nurse with intermittent bouts of agonizing pain in class
- Pain seems to be RLQ, belly very tender, tense, slightly distended
- Alternates with listlessness
- T 99, HR 133, RR 22, BP 85/45
- Vomits and passes a jelly like bloody stool in the nurses office

## 19 Intussusception

- "Telescoping" of intestine into itself, often ileocecal
- Age 6 months to 6 years
- Incidence 1/1000
- Symptom progression
  - Intermittent bouts of excruciating pain
  - Often listless inbetween
  - Abdominal distension

- “Currant Jelly” stool

## 20 Intussusception

- Medical Evaluation
  - Blood and Urine Labwork
    - Abdominal vs ? Neuro
  - Radiology
    - X-rays often inconclusive
    - Ultrasound
- Treatment
  - High pressure contrast enema
  - Surgery

## 21 Case 6

- 13 year old well developed girl repeat visits to nurses office every 3–4 weeks for worsening pain
- Severe crampy bilateral lower abdominal pain
- States it’s not cramps since she hasn’t started menstruating
- T 98.8, Pulse 128, RR 16, BP 100/60

## 22 Imperforate Hymen

- Congenital abnormality often not recognized until adolescence
- Symptom progression
  - Cyclical severe pelvic pain, worsens with each passing month
  - Urinary pressure
  - Constipation
  - Lack of menses despite other appropriate pubertal development

## 23 Imperforate Hymen

- Medical Evaluation
  - Pregnancy Test!!
  - Vaginal or Pelvic exam
    - Bulging bluish mass at introitus
  - Pelvic Ultrasound
- Treatment
  - Surgical hymenotomy by OB/Gyn

## 24 Case 7

- 8 year old girl sent to nurses office second time this week because of cough and cold symptoms
- T 104.9, HR 130, RR 60, BP 120/70
- Complains of RLQ abdominal pain
- Frequent wet cough and rapid labored breathing

## 25 Pneumonia

- Localized infection of the lungs
- Often follows common cold virus
- Symptom progression
  - Common cold symptoms

- Sudden high fever
- Increasing cough
- Breathing difficulty
- Abdominal pain if lower lobes

## 26 Pneumonia

- Medical Evaluation
  - Chest exam for localizing findings
  - CBC, blood cultures
  - X-rays
    - May be discovered on CXR during evaluation of abdominal pain
- Treat with antibiotics, PO or IV

## 27 Case 8

- 10 year old girl sent to office for abdominal cramps
- Diffuse pain all over
- T 104.4, HR 130, RR 18, BP 110/65
- Passes grossly bloody and mucus filled diarrhea

## 28 Bacterial Enteritis

- Salmonella, shigella, Yersinia, Campylobacter, E. Coli
- Symptom progression
  - Abrupt onset of fever, chills, abdominal cramps
  - Diarrhea often grossly bloody or with visible mucus
  - Systemic complications
    - Seizures, arthritis, HUS

## 29 Bacterial Enteritis

- Medical Evaluation
  - CBC, Electrolytes
  - Fecal WBCs and culture
- Treatment
  - IV Fluids if dehydrated
  - Antibiotics based on culture results or current epidemiology

## 30 Case 9

- 9 year old boy with repeated visits to nurse's office for tummyache
- Usually occurs in the afternoon, complains of pain on left side
- T 99, HR 90, RR 16, BP 135/70
- Chubby kid with tender LUQ and LLQ with firm mass palpable
- Smells kind of poopy

## 31 Encopresis

- Soiling with stool after toilet trained
- 1-2% of kids under 10, 80% are boys
- Symptom progression
  - Constipation, Stool Withholding
    - Painful BMs, embarrassed at school
  - Colon stretches (megacolon)

- Loss of normal sensation and tone
- Surprise!

### 32 Encopresis

- Medical Evaluation
  - Check rectal tone
  - X-rays
- Treatment
  - Initial Cleanout Phase
    - Enemas, Laxatives
  - Maintenance Phase
    - Stool softeners, diet
    - Poop schedule, retraining, privacy

### 33 Case 10

- 6 year old girl brought from class doubled over with abdominal pain
- Holding stomach, vomiting, confused and listless, feels hot but clammy
- T 104.9, HR 155, RR 32, BP 78/30
- Evolving purple spots on arms and lower legs

### 34 Meningococemia

- Rapidly progressing, life-threatening bacterial bloodstream infection
- Neisseria Meningitidis may cause meningitis, but more dangerous when it does not
- Symptom progression (FAST!!)
  - Fever, lethargy
  - Vomiting, abdominal pain
  - Purpuric rash

### 35 Meningococemia

- Medical Evaluation
  - CBC, blood culture, Spinal tap, stains and cultures of rash
- Treatment
  - ABCs, fluids, pressor support
  - IV antibiotics
- Prophylaxis for household contacts and prolonged face-to-face contact

### 36 Case 11

- 7 year old girl vomits in class
- Holds hand over right upper belly, skin and eyes look yellowish
- T 100, HR 110, RR 18, BP 110/75
- Vomits more in nurses office then has some diarrhea
- Call home, mom reports 3 year old brother sent home from daycare with vomiting and fever

### 37 Hepatitis A

- Most cases (30%) are in children
- Fecal-oral transmission
- Often virtually indistinguishable from viral gastroenteritis

- Symptom progression
  - Nausea and vomiting
  - RUQ Pain
  - Fever
  - Jaundice
  - Diarrhea

### 38 Hepatitis A

- Medical Evaluation
  - Assessment of hydration status
  - Liver functions, Hepatitis serology
- Treatment
  - Supportive care - no medicine
  - IV fluids if dehydrated
  - Vaccine and/or Hep A Ig for close contacts

### 39 Case 12

- 16 year old girl told friends she has severe abdominal pain all day, then passes out in hall
- Comes to in nurse's office, still having severe LLQ pain
- T 98, HR 140, RR 16, BP 95/55
- Confides she hasn't had a period in 3 months but is bleeding today

### 40 Ectopic Pregnancy

- Fertilization and implantation in Fallopian tube or abdomen
- Symptom progression
  - Missed period, other symptoms of pregnancy for 3-12 weeks
  - Severe One-sided lower quadrant or pelvic pain
  - Vaginal bleeding

### 41 Ectopic Pregnancy

- Medical Evaluation
  - Female Abdominal Pain - Big Net
  - B-HCG
  - Ultrasound
- Treatment
  - Methotrexate if early pregnancy
  - Surgical Removal

### 42 Case 13

- 7 year old boy arrives to nurse's office with stomach cramps
- Holds hand over mid belly
- T 98.8, HR 90, RR 16, BP 115/65
- Calls you into bathroom because his pee looks reddish brown
- You notice purple bruises up and down legs and buttocks

### 43

- Multisystem autoimmune vasculitis
- Symptom progression

- Slowly progressing purpuric rash mostly on legs and buttocks in generally well-appearing child
- Hematuria
- Joint pains or swelling
- Colicky abdominal pain with increased risk of intussusception

44 

- Medical Evaluation
  - Diagnosis of EXCLUSION
  - CBC, UA, ESR, IgA levels
- Treatment
  - Supportive care, pain relief
  - Steroids for severe abdominal pain
  - Monitor hematuria and renal function

45  Case 14

- 15 year old boy you saw a few weeks back with sore throat carried in from soccer practice
- Kicked in abdomen complains of pain in left upper abdomen
- T 98.6, HR 140, RR 20, BP 90/40
- Tender LUQ with bruising, slight distension, feels lightheaded

46  Blunt Trauma

- A leading cause of morbidity and mortality across all age groups
- Splenic rupture, hepatic laceration, pancreatic contusion, intestinal rupture, renal hematoma...
- Risk of splenic rupture increased about 2 weeks into infectious mononucleosis

47  Blunt Trauma

- Medical Evaluation
  - ABCs, fluids, blood
  - Diagnostic Peritoneal Lavage
  - CT Scan
- Treatment
  - Almost always surgical for serious injuries

48  Red Flags

- Localized Pain away from umbilicus
- Severe Tenderness or Distension
- Vital sign abnormalities
- High Fever
- Lethargy
- Hematuria
- Bloody Stool or Vomit
- Purpuric Rash
- Pelvic Pain with menstrual irregularity

 I Have a Tummy Ache!

- The Evaluation of Abdominal Pain in