Masquerade Party: Unmasking Systemic Causes of Abdominal Pain

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Objectives

- Expand the differential
- Identify characteristics of abdominal pain suggesting a systemic cause
- Present an illustrative case study
- Develop an approach to the recognition of systemic causes of abdominal pain

Disclosures

I have no relevant financial relationships to disclose
I will not discuss any off-label use and/or investigational use in my presentation
General approach Step 1: The Traditional

Abdominal pain

Rule out acute surgical pathology

Is this a non-surgical intra-abdominal process?

General approach Step 2: A Second Chance

Am I being fooled?

Is this an atypical presentation, of a common disease process?

Is this a typical presentation of an uncommon disease process?

Pneumonia
Acute Coronary Syndrome
Aortic dissection
General approach Step 2: A Second Chance

Is this a systemic illness?

Hematologic
Metabolic
Infectious
Inflammatory
Toxin

General approach Step 2: A Second Chance

Am I being fooled?

Is this referred pain?

Is this a systemic illness?

“Non-Specific Abdominal Pain”

Abdominal pain: Making the Diagnosis

- Pattern recognition leads to 30 - 40% misdiagnosis
- 40% remain undiagnosed (nonspecific abdominal pain)
- 80% of nonspecific abdominal pain are benign and self-limited
**Differential diagnosis:**

**Think outside the box**

**Systemic causes:**
1. Hematologic
2. Metabolic
3. Infectious
4. Inflammatory
5. Toxin
6. Functional

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**Case 1: This won’t hurt a bit...**

- 57-year-old woman presents to office with abdominal pain and weakness.
- One month prior, gastric bypass for obesity and a cholecystectomy for gallstones.
- Early post-op course uncomplicated, discharged in 2 days.

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**Case 1: I’m back...**

- First week post-op complained of watery stool, dark urine and intermittent abdominal pain
- 1st visit to office, DC after meds, oral fluids
- 2nd visit to ED, DC after fluids
- 3rd visit to office, 12th post-op day with recurrent, diffuse, crampy, abdominal pain, CT and admit to surgery

Case 1: Back again…
- Office visit #4, 20 days post-op, abdo pain, labs normal, treated for UTI
- Office visit #5, day 22, no better, admit to surgery
- Levaquin, seizure, dilantin, EEG, CT, MRI, transient encephalopathy, DC on bactrim

Case 1: Getting worse…
- Visit #6 to ED, 31 days post-op, with recurrent, lower abdominal pain and red urine, lightheadedness, weakness, nausea
- Hypertension, hyperpigmentation, hyponatremia
- Admitted, getting weaker, 2 normal CTs

Case 1: OK, IDUNO…
- Progressive weakness…flaccid quadriparesis…day 30 on a vent…
- 2 MRIs, EMGs, 2 LPs… EBV, Lyme, CMV, etc all negative
- Complicated by UTIs, line sepsis, VAP…
- Hypertension, bradycardia and asystole…
- Day 32 diagnostic test performed….
Things to think about

- Multiple return visits, episodic
- Patient sick, exam benign
- Constitutional, systemic symptoms
- Skin involvement - hyperpigmented
- CNS involvement, encephalopathy
- Clues in the labs
- Triggered by other disease, stressor

Case #2: Two-sided razor

- 28 y.o. male with abdominal pain
- N&V
- Doubled over, very uncomfortable
- Voluntary guarding, no peritoneal signs
- Most tender RUQ
- Tachycardic, normotensive

Case #2

- Sickle cell anemia
- Worse than his usual pain
- CBC:
  - hematocrit 23.5
  - wbc 21
  - left shift
  - platelets 150
Hematologic: Sickle cell disease
- High incidence of cholecystitis
- Consider acute splenic sequestration in very young
- Can cause ischemic bowel injury
- Patient is often helpful in suggesting whether this is a “typical” crisis

Hematologic
Common mechanisms for pain:
- Localized thrombosis
- Vaso-occlusive ischemia
- Organomegaly due to sequestration or infiltrate
- Mucosal hemorrhage

Hematologic: Other
- Leukemia
- Thrombocytosis
- Lymphoma
- Cyclic neutropenia
- Acute hemolytic states
- Coagulopathies
Take home
- An intra abdominal process may be what triggered the systemic problem. (Ex. DKA, sickle cell crisis)
- CBC helpful in identifying hematologic causes
- Pain out proportion to exam
- Pain is often episodic

Case #3: the root of the problem
- 19 y.o. female
- Diffuse abdominal pain
- N&V, no diarrhea
- Preceded by high fever, headache and myalgias
- “Rizon” on her “root” one week ago

Case #3: the root of the problem
On examination:
- T 40.1, P 130, BP 150/80, RR 20
- Abdomen soft, diffusely tender
- Small papule on forearm
- No rash
- Joints normal
RMSF

- Characteristic rash, macular, begins on wrists and ankles, then palms and soles
- Spreads, becomes palpable and petechial
- Onset usually after 3-5 days
- 10-15% no rash at all
- Diagnostic serology is retrospective

Infectious: Other

- Meningococcemia
- Varicella
- Tuberculosis
- Lyme disease
- Toxic Shock Syndrome
- Mononucleosis

Infectious: Rashes

- Meningococcemia - petechial
- Rocky mountain spotted fever - above
- Lyme disease - erythema migrans
- Toxic Shock Syndrome - desquamation
- Varicella - vesicular, dermatomal
Take home

- Look for characteristic rashes
- Abdominal pain follows significant constitutional symptoms
- Fever, vomiting, abdominal pain, but no diarrhea - beware the “gastro label”

Case #4: the bottom of it

- 8 y.o. male
- Severe, diffuse, colicky abdominal pain
- Hematuria
- N&V, diarrhea
- Ankles hurt
- Similar episodes in past few months

Case #4: the bottom of it

On examination

- Afebrile, normal vitals
- Abdomen soft, diffusely tender
- No CVA tenderness
- Palpable, purpuric rash on buttock
HSP
- Self-limited generalized vasculitis
- Involves dermis, glomeruli, bowel wall
- Children 8-12
- 8% get GI bleed
- Abdominal pain responds to steroids

Inflammatory: Other
- Polyarteritis Nodosa
- Rheumatoid vasculitis
- Systemic Lupus Erythematosus
- Eosinophilic Enteritis

Take home
- Look for characteristic rashes
- Recurrent, multiple visits
- Other systems with signs of inflammatory disease, such as arthritis
Case #5

- 2 y.o. male sick for one week
- Crampy abdominal pain
- N&V
- Sleeping a lot
- Constipation
- Not himself X 1-2 months

On examination

- Lethargic, thin
- Afebrile, VSS
- Abdomen soft, nontender
- CNS nonfocal

Case #5

CBC
- microcytic anemia
- basophilic stippling
- normal WBC
- X-rays confirm your suspicion
Lead toxicity

- Most common in children < 6 y.o.
- Binds to RBCs and stored in bone and teeth
- Neuropsychiatric problems, neuropathy
- Serum lead level diagnostic
- Chelation therapy

Toxic: Other

- Heavy metals
- Iron, mercury, arsenic
- Mushroom poisoning
- Sympathomimetics
- Salicylates
- Black widow spider bite
Toxic take home

- Most of these toxins are not identified on a toxicology screen
- Need to ask about possible toxins and in particular, occupational exposure
- Associated with encephalopathy

Case #6:

- 35 y.o. male
- migratory abdominal pain for 5 months
- N&V
- + arthralgias
- + rashes, now gone
- + headache

Case #6:

- Also…
- Itchy teeth
- Urine glows in the dark
- + ROS
- Examination normal except for diffuse body tenderness
Case #6:

Medical history
- Multiple investigations negative

Social history
- Ran out of percocet, lost prescription, just moved here

Case #6: Diagnosis

Functional: Malingering
- Patient consciously fabricates symptoms
- Obvious secondary gain – drugs, off work

Functional: Other
- Somatization
- Munchausen’s

Case #1: Diagnosis?

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Metabolic: Other
- Addisonian crisis
- DKA
- Hypercalcemia
- Thyrotoxicosis
- Angioedema

Metabolic: Other
- Pheochromocytoma
- Familial Mediterranean fever
- Uremia
- Hemochromatosis

Metabolic take home
- Look at your chemistry panel - are the changes really “just from the vomiting”
- Metabolic crisis usually precipitated by a stressor - look for concomitant disease
- Consider specific test instead of the 3rd CT - Urine PBG, TSH
Differential diagnosis:
Think outside the box

Systemic causes:
- Hematologic
- Metabolic
- Infectious
- Infectious
- Inflammatory
- Toxin
- Functional

Clues to suggest a systemic cause
- Diffuse pain
- Pain out of proportion to exam
- Patient sick, exam benign
- Constitutional symptoms precede abdominal pain
- Distinct rashes
- CNS involvement, encephalopathy

Clues to suggest a systemic cause
- Immunocompromised
- Multiple return visits, episodic
- Clues in the labs
- Triggered by other disease, stressor.
- The patient tells you it’s systemic