Diagnostic challenge in acute abdomen

Case

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The patient sustained blunt trauma by a hand fist focused directly to the lower abdomen. 1-h later, he started to have a little discomfort in the epigastric region then the pain became generalized & agonizing in nature, increasing in severity with walking & breathing not radiated anywhere associated with low grade fever but no vomiting or diarrhea with good appetite & no acidity. The patient gave history of lassitude & flue-like illness 1 week prior to trauma.
REVIEW OF OTHER SYSTEMS:
No relevant symptoms

PAST SURGICAL HISTORY:
The patient had asymptomatic right inguinal hernia for 30 years

PAST MEDICAL HISTORY:
Gastroenteritis one year ago - took RANITIDIN for a while
Chronic dyspepsia & infrequent epigastric pain on irregular treatment for 5 years.

Medications
• No medications or allergies

Family History
Parents and sister (7) well

Socially
No infectious contacts,
Just quit smoking 3 pk/wk,
EXAMINATION: GENERAL:
Ill, dehydrated, pale, sweaty,
PR: 90B/M regular & good vol. → 110B/M preop
BP: 130/80 mmHg → 110/70 mmHg after 3 hrs of observation
temp 37.7 oc

EXAMINATION: ABDOMINAL:
Central distension
Restricted movement with respirations.
No scar, no sign of bruises
No rash, no palpable mass.
Tenderness & guarding in the RIF & R lumbar regions
Dull percussion note centrally.
B.S. sluggish
PR-exam. loaded with feces.
Reducible RIH
Investigations in ER Diagnosis

R.B.S=110mg%
B. urea=55 mg %
Hb=14 g%
G.U.E= pus cells ++
W.B.C= 13 x 10

What radiographic test is needed?
1. What are the findings?
2. What is the likely diagnosis?
3. Name two other DDx
x-ray of the chest and upper abdomen in erect position showing subphrenic air (air under diaphragm/pneumoperitonium) Perforated viscus

Approximately 30% of acute perforations are not evident on an erect chest radiograph.
DDX for Pneumoperitoneum

Perforated ulcer  
- gastric, duodenal*

Perforation of bowel**

Pneumatosis cystoides intestinalis

Subphrenic abscess

Iatrogenic  
- peritoneal dialysis  
- abdominal tap

Vaginal insufflation

Hysteroography

Residual postop air***

* commonest cause  
** causes massive pneumoperitoneum  
*** may last up to three weeks
How is free air ruled out if the patient cannot stand?
• Left lateral decubitus—free air collects over the liver and does not get confused with the gastric bubble
Q) What else you look for in Plain Abdominal X-Ray (Erect & Supine) in acute abdomen?
--- abnormal distribution of gas
--- distended loops of bowel
--- soft tissue densities
--- enlargement of solid organs
--- abnormal calcification
--- blurring of the psoas outlines
--- gas in the biliary tree
Abdominal x-ray returns and shows presence of free air under the diaphragm. What is the next step in management?
Operative Findings

• After rehydration by IVF, AB shot (cefotaxime 1 gm + metronidazole 500 mg) & NGT
• Expl. Laparotomy ↓ GA
• Peritonitis + bile stained intestinal contents
  Fibrinous exudate on serosal surfaces of bowel.
  Two perforations in the mesenteric side distal ileum, oversewn by 4-0 vicryl after refreshment of edges + biopsy from perf. margins with mesenteric LN biopsy
• Copious irrigation & peritoneal drainage

Case Presentation

8–3a
Grade II repair

8–3b
Perforation in the mesenteric side of terminal ileum & reactive mesenteric LNs
The perforation from other side
Mesenteric LNs
Postoperative Course

Good. He has been ambulating, passed motion on day 3. Vitals are normal, wound is clean & Foley is removed.

- Then developed fever of 38.5°C on POD#4
- Profoundly lethargic, with myalgia and headache.
- Occasional bilious vomiting.
- The peritoneal drain was only draining few cc of serous fluid & later removed on day 4.
- Broad spectrum abx.
- Bowel rest / NGT
Q) What are the causes of postoperative fever in relation to time?

Q) What will be your examination checklist?
The **FIVE “W”** & timing of fever relative to the postoperative day (POD) will indicate the most likely cause

- **Wind** (POD#1) atelectasis, pneumonia (first 48 hours)
- **Water** (POD#3) UTI if urinary catheterization, anastomotic leak
- **Wound** (POD#5) wound infection, abscess IV phlebitis
- **Walking** (POD#7) DVT / PE
- **Wonder-drug** Many drugs cause fever, blood transfusions, central lines we put in (line sepsis)
Examine the wound and abdomen for an abscess
Consider a pelvic abscess and perform a rectal examination
Examine the lungs - pneumonitis or collapse
Examine the legs - for venous thrombosis
Examine the conjunctivae for an icteric tinge and the liver for enlargement, and enquire whether the patient has had rigors (pylephlebitis)
Examine the urine for organisms (pyelonephritis)
Suspect subphrenic abscess
Postoperative Course

• Investigations CXR, US, Virology, urinalysis, CBC, CRP all were normal apart from widal test that showed increasingly high titer 1/320 then 1/640 together with histopathological specimen from perforation margin confirmed typhoid ileal perforation & reactive mesenteic LN hyperplasia.

• Dramatic response with subsidence of fever after treatment with ciprofloxacin 500mg b.d IV then oral when tolerating diet.

• Discharged home POD #8.
A. M. G, a 73 year old man referred from medical dept. with history of sudden acute painful progressive abdominal distension, repeated bilious vomiting & obstipation for 1 week. The patient used to take laxatives & enema frequently during this time with no benefit. He denied any previous similar attacks. There were neither fever nor bleeding or hyperacidity.

What conditions can mask abdominal pain?
Beware of a silent perforation in the elderly and patients on corticosteroids.

- Steroids, diabetes, paraplegia
The patient was asthmatic, hypertensive on captopril with IHD on SL GTN on need.
He had history of old pulmonary T.B 30 yrs ago where he was treated for 2 years at that time.
No history of previous surgery or trauma
He is chronic heavy smoker 2 packets a day
EXAMINATION: GENERAL:
Elderly man emaciated, drowsy, dehydrated, loathes in respirations, pale JAc+c+ol
PR=130B/M weak regular BP=80/60 UOP=10cc/hr
Chest exam emphysematous with scattered rhonchi all over

EXAMINATION: ABDOMINAL:
The abdomen was symmetrically distended not moves with respiration & generalized rigidity with central tympany & -ve BS no mass
PR exam. showed empty rectum

What is the provisional diagnosis?
Acute abdomen

Diagnostic Workup
Acute abdomen

Diagnostic workup

A) Blood Tests:
- Haemoglobin, Haematocrit, White Cell Counts/differential
- CRP
- Serum Electrolytes, Urea, Creatinine
- Arterial Blood Gas Determinations
- Serum Amylase
- Liver Function Test/TSB
- Clotting Studies

B) Urine Tests:

C) Stool Tests:
- For Occult Faecal Blood

D) AXR
• What is this investigation?
• What are the findings?
• Are there any further special studies for acute abdomen?
• Contrast X-Ray Studies
  -- Barium Enema
  -- Barium Follow Through
  -- Intravenous Urogram

• Ultrasonography
  • Gallstones, dilated common bile duct, abnormal gall bladder.
  • Inflamed pancreas or pseudocyst
  • Liver metastases or cysts.
  • Aortic aneurysm
  • Large bladder.
  • Dilated pelviccalyceal system in ureteric obstruction
  • Ovarian cysts.
  • Hydro- or pyosalpinx.
  • Abdominal or pelvic collections.
  • Masses.

• CT scan (retroperitoneon)

• Angiography

• Endoscopy

• Laparoscopy
  Lower abd. Pain in women

• Paracentesis
Classically, what endocrine problems can cause acute abdominal pain?

1. Addisonian crisis
2. DKA (Diabetic KetoAcidosis)
Acute abdomen

Indications for Laparotomy

Management
Acute abdomen

Indications for Laparotomy

Physical Findings
- Involuntary guarding or rigidity, esp. if spreading
- Increasing / severe localized tenderness
- Tense or progressive distension
- Tender abd. / rectal mass w/ high fever or hypotension
- Rectal bleeding w/ shock or acidosis
- Equivocal abd. findings along w/:  
  - Septicemia
  - Bleeding (unexplained shock or acidosis, falling HCT)
  - Suspected ischemia
  - Deterioration on conservative treatment

Radiologic Findings
- Pneumoperitoneum
- Gross or progressive bowel distention
- Free extravasation of contrast material
- SOL on scan, with fever
- Mesenteric occlusion on angiography

Endoscopic Findings: Perforated or uncontrollable bleeding lesion

Paracentesis / FAST-Findings: Blood, bile, pus, bowel contents or urine
Management:

Emergency expl. laparotomy after resuscitation

- Multiple perforations in the jejunum & ileum with a solitary liver nodule.
- Bowel resection & 1 ry anastomosis with biopsy of liver nodule
- Histopathologically metastatic carcinoid syndrome.
- Unfortunately over the coming 48 hours the patient developed increasing resp. failure in ITU & died on 3rd postop. day
Liver nodule
A 28 year pregnant woman gravida 5 para 4 in her week 24 of uneventful pregnancy referred to the surgical emergency department from Al Batool obstetric and gynecology hospital after 1 day history of sudden severe generalized cramping abdominal pain, obstipation, progressive abdominal distension & frequent bile stained vomiting.

history of trivial blunt abdominal trauma 4 days earlier

no history of nausea, fever, chills, vaginal bleeding or prior abd. surgery.

Her previous pregnancies all were normal vaginal deliveries for normal full term neonate.
Initial Observation

EXAMINATION: ABDOMINAL:
- centrally distended abdomen, generalized guarding and tenderness with bowel sounds minimally audible. Per rectal examination was normal.

Case Presentation

EXAMINATION: GENERAL:
A dehydrated, pale patient who couldn’t lie flat because of pain.
Her PR 130 B/M weak, BP 80/40mmHg RR 26/M and she was afebrile

EXAMINATION: ABDOMINAL:
- centrally distended abdomen, generalized guarding and tenderness with bowel sounds minimally audible. Per rectal examination was normal.
• Hb 7 g%, WBC (14x10^3/ml) oxygen saturation of 90.
• Due to concern about possible hazards of an x ray in pregnancy and unavailability of US at night, neither an abdominal X ray nor an ultrasound were done.
• After admission, aggressive IVF & BT to correct hypotension.
• NGT was draining bile stained fluid & normal urine output/color.
• Parenteral cefotaxime 1 gm
• Close observation. no change of abdominal pain.
• An hour later, deteriorated with worsening abdominal distension and pain.
• Exploratory laparotomy was decided
Q) What are four DDX of acute abdomen in pregnancy?
Answer

1. Ovarian torsion
2. Ectopic pregnancy
3. Salpingitis
4. Abruptio placentae
5. Surgical
Operative findings

- serosanguinuous intraperitoneal fluid & a long gangrenous jujenoileal segment with its base firmly knotted around the mesentery of massively distended gangrenous sigmoid colon
- Resection of gangrenous small bowel and primary anastomosis with resection of gangrenous sigmoid and Hartmann's colostomy.

The patient did well post operatively with no impact on her current pregnancy. The patient was started on liquids on the 4th postoperative day.
SUPERVISOR COMMENTS

Literature
1st case:

1. Ingestion
2. Absorbed into mesenteric lymphatics
3. Via thoracic duct to blood stream
4. General circulation (continuous, cutaneous)
5. Peyer’s patches of ileum
6. Excreted in stool and urine

PLATE I
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EARLY STAGE: PEYER'S PATCHES OF ILEUM SWOLLEN AND INFLAMED (last 24 hours)

MASSIVE INFILTRATION OF SUBMUCOSA BY MONONUCLEAR CELLS; DISSOCIATION OF MUSCULARIS MUCOSAE

ADVANCED: SLUGH CAST OFF; ULCER BASE ON MUSCULARIS

MODERATELY ADVANCED: SLUGHING OF PEYER'S PATCH

PERFORATION

Hemorrhage

SPLEN: SWOLLEN, INTENSELY CONGESTED
History Carcinoid Tumors

1888 – First described by Labarsch
1907 – Oberndorfer term “Karzinoide” (carcinoma-like, lack of malignant potential or benign features)

• Arises from enterochromaffin cells (Kulchitsky cells) enteroendocrine cell distributed throughout GIT.
  - Ability to stain with potassium chromate (chromaffin), a feature of cells that contain serotonin

• Found in crypts of Lieberkühn (intestinal glands)

• Secretes serotonin among other peptides
Metastatic Carcinoid Tumors: Brief Review

- **Classified** by embryologic origin
  - Foregut (resp tract, thymus, stomach)
  - Midgut (small intestine 28%, appendix 40%, prox colon)
  - Hindgut (distal colon 11%, rectum 16%, GU)

- Small bowel – multicentric
- 10-20% 2nd primary neoplasm

**Grossly** small, firm submucosal nodules, yellow-tan cut surface

**Micro:** Well-differentiated, containing small regular cells with rounded nuclei arranges in sheets or alveolar. Contain argyrophil granules
Malignant Carcinoid Syndrome

- >90% with carcinoid syndrome have metastatic disease, exceptions are bronchial and ovarian tumors
- Patients with syndrome almost invariably have metastases
- Venous drainage from a metastatic tumor in the liver goes directly into the systemic circulation and bypasses hepatic inactivation
- **CLASSIC SYMPTOMS:** 6th and 7th decade,
  - Vasomotor
  - Cardiac
  - Gastrointestinal/ abdominal pain or SBO
- Initial diagnostic test 24-hr urinary 5-HIAA
- Treatment and prognosis dependent on size and location of primary require a multidisciplinary approach in specialized centers,
- Resection increased overall survival 5-yr survival 36%
- Metastases correlate with location and size of tumor
3rd case

- **Compound volvulus in pregnancy** is an uncommon and potentially serious condition.
- Only 73 cases have been reported worldwide.
- The closed loops of bowel become gangrenous in few hours → generalized peritonitis, sepsis and dehydration.
- In this case the delay in presentation, occurrence in pregnancy complicate the diagnosis.
Diagnosis of ACUTE ABDOMEN is difficult, challenges even modern diagnostic modalities, and requires a high degree of suspicion.

Outcomes improve if the “evil that lurks within the abdomen” is diagnosed and treated early.