MECHANISMS OF HUMAN DISEASE
AND
PHARMACOLOGY & THERAPEUTICS

SMALL GROUP DISCUSSION

MHD II
Session 2

JANUARY 11, 2019

STUDENT COPY
CASE 1

CHIEF COMPLAINT: "My bowels have not moved right x weeks"

HISTORY OF PRESENT ILLNESS: The patient is a 68 year-old woman who complains of a significant change in bowel movements during the past 6 weeks. She describes her bowel movements as being regular, once per day, up until 6 weeks ago. For the past 6 weeks she experienced 3-4 day periods of constipation alternating with non-bloody diarrhea.

Although most bowel movements resulted in formed stools which were brown and of normal caliber, three days ago she passed a stool with streaks of bright red blood on the surface. The patient, however, was not alarmed because she occasionally suffers from bleeding hemorrhoids.

During periods of constipation she feels bloated and senses a mild discomfort or pain in the abdomen. The pain is always generalized and seems to be relieved with defecation. She lost "a couple of pounds" recently but decreased her dietary intake to "keep my weight down." Even though she tires easily on some days, her health is good. She denies nausea, vomiting, melena, vaginal bleeding, dysuria, hematuria or frequency.

She is under the care of a physician for diabetes mellitus, type 2, osteoarthritis and glaucoma. The patient is 16 years post menopausal. She had a cholecystectomy at the age of 30.

Six months prior the patient was started on vitamins with iron because of "a touch of low blood”.

PHYSICAL EXAMINATION: The patient is alert and in no acute distress. Vital signs are as follows:
Supine Blood Pressure  152/82mmHg; Apical Heart Rate 92/minute and regular;
Standing Blood Pressure 150/82; Apical Heart Rate 96/minute and regular;
Respiratory Rate 16/minute; Temperature 98.4°.
Height 5'4” Weight 172 pounds

Examination of the head and neck reveals bilateral cataracts. The auditory canals are packed with cerumen.

The breasts are large, pendulous and symmetrical. Masses are not palpable.

The lungs are clear by percussion and auscultation. $S_1$ is loud; $S_2$ is split (physiologic). Abnormal heart sounds are absent.

The abdomen is soft, non-tender. A 12 cm diagonal scar is present in the right hypochondrium. Percussion reveals mild hepatomegaly; the liver edge is palpable and is firm. Bowel sounds are normoactive. Rectal exam reveals no masses. The stool is brown and is positive for occult blood.
Pelvic examination reveals normal external genitalia. The vaginal mucosa is atrophic. A small cystocele is present when the patient strains. The uterus is small; there are no adnexal masses.

**LABORATORY DATA**

<table>
<thead>
<tr>
<th>CBC</th>
<th>5.6</th>
<th>[4.0-10.0] k/ul</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBC</td>
<td>2.23</td>
<td>[3.60-5.50] m/ul</td>
</tr>
<tr>
<td>RBC</td>
<td>8.7</td>
<td>[12.0-16.0] gm/dl</td>
</tr>
<tr>
<td>Hgb</td>
<td>26.0</td>
<td>[34.0-51.0] %</td>
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<tr>
<td>MCV</td>
<td>75</td>
<td>[85-95] fl</td>
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<tr>
<td>MCH</td>
<td>24.4</td>
<td>[28.0-32.0] pg</td>
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<tr>
<td>MCHC</td>
<td>31.7</td>
<td>[32.0-36.0] gm/dl</td>
</tr>
<tr>
<td>RDW</td>
<td>18.2</td>
<td>[11.0-15.0] %</td>
</tr>
<tr>
<td>Plt Count</td>
<td>502</td>
<td>[150-400] k/ul</td>
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</tbody>
</table>

**COMPLETE METABOLIC PANEL**

<table>
<thead>
<tr>
<th>Sodium</th>
<th>140</th>
<th>[136-146] mm/l</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium</td>
<td>3.9</td>
<td>[3.3-5.1] mm/l</td>
</tr>
<tr>
<td>Chloride</td>
<td>101</td>
<td>[98-108] mm/l</td>
</tr>
<tr>
<td>CO2</td>
<td>27</td>
<td>[20-32] mm/l</td>
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<tr>
<td>Bun</td>
<td>13</td>
<td>[7-22] mg/dl</td>
</tr>
<tr>
<td>Creatinine</td>
<td>1.1</td>
<td>[0.7-1.5] mg/dl</td>
</tr>
<tr>
<td>Glucose</td>
<td>189</td>
<td>[70-100] mg/dl</td>
</tr>
<tr>
<td>Albumin</td>
<td>3.5</td>
<td>[3.6-5.0] gm/dl</td>
</tr>
<tr>
<td>Protein, Total</td>
<td>6.5</td>
<td>[6.5-8.3] gm/dl</td>
</tr>
<tr>
<td>Calcium</td>
<td>8.9</td>
<td>[8.9-10.3] mg/dl</td>
</tr>
<tr>
<td>Alkaline Phosphatase</td>
<td>157</td>
<td>[30-110] iu/l</td>
</tr>
<tr>
<td>ALT (SGPT)</td>
<td>16</td>
<td>[7-35] iu/l</td>
</tr>
<tr>
<td>AST (SGOT)</td>
<td>23</td>
<td>[5-40] iu/l</td>
</tr>
<tr>
<td>Bilirubin, Total</td>
<td>1.9</td>
<td>[0.2-1.4] mg/dl</td>
</tr>
</tbody>
</table>

**CASE 1 EDUCATIONAL OBJECTIVES**

1. Define all unknown terms.

2. What is (are) the main clinical problem(s) - not the diagnosis?
3. Develop a differential diagnosis for constipation.

4. a). Explain the significance of the laboratory data in this case.
   b). What type of anemia do you suspect in this patient? What laboratory test(s) would you order to further evaluate the anemia? (Facilitators will have results of appropriate tests for students to review during the session).

Colonoscopy is done and shows a mass of the descending colon with a central necrotic ulcer. Ultrasound of the liver is done and reveals multiple echogenic foci within the liver.

5. What is the most likely diagnosis? Cite data which supports or refutes your diagnosis.

Question 6 - Unknown – question will be provided during the small group session.

7. Review Case Images – Gastrointestinal Set 2

CASE 2
CASE HISTORY

Cc: I have been having too many bowel movements for at least 3 years.

A 22-year-old woman complains of having bulky, foul smelling stools up to 4 or 5 times a day. She sees no blood but indicates that the mushy stool is often pale or "tan" and "fills up the toilet bowl." She has no abdominal pain but frequently feels bloated and tired. Her flatulence has been downright embarrassing. Based on the advice of a friend she cut out milk products from her diet for some time but this did not change anything. She is now in a new relationship and does not want her "bowels" to interfere.

Aside from having a tonsillectomy and appendectomy in her teens, the patient denies having any medical problems. She does not take any prescribed or over the counter medications regularly. She works as a consultant mostly from her home. No one else in her family has this problem.

PHYSICAL EXAMINATION: The patient appears somewhat anxious. Vital signs: Blood Pressure: right arm 118/72, left arm 122/74; Heart Rate: 76/minute and regular; Respiratory Rate 12/minute; Temperature 98.4 F. Height 5’6”, Weight 152 lbs.

HEENT: Normal. Thyroid gland normal in size. No lymphadenopathy.
CHEST: Lungs are clear to auscultation and percussion bilaterally. Chest wall is normal
CARDIOVASCULAR SYSTEM: S1 and S2 are normal. No murmurs or other extra cardiac sounds.
ABDOMEN/RECTUM: The abdomen is round, tympanic with percussion. No tenderness is elicited. No organomegaly. Rectal exam reveals no masses. Stool is pasty and malodorous.
EXTREMITIES: No clubbing, cyanosis or edema of the bilateral extremities.

EDUCATIONAL OBJECTIVES

1. What is the main problem?

2. What characteristics define this clinical problem?

3. What points or questions would you cover when taking a history from a patient with this clinical problem?
4. How would you differentiate the acute form of this clinical problem from the chronic form?

5. Classify the chronic form of this clinical problem into groups and subgroups, explaining the pathogenesis (mechanism) of each type. Develop a general differential diagnosis of the patient's clinical problem by using this classification system. Cite some examples in each category.

The physician formulates a differential diagnosis and orders the following studies.

D-Xylose Absorption Test

**Blood**  3 mg/dl
- Infants to age 5 months  Greater than 15 mg/dl
- Children age 6 months to 12 years  Greater than 20 mg/dl
- Adults, age 17 and older  21-57 mg/dl

**Urine**  0.5 gm (5 hour urine sample)
- Ages 65 and younger  > 4 gm in a 5 hour urine sample
- Ages 65 and older  > 3.5 gm in a 5 hour urine sample
  > 5 gm in a 24 hour sample

**Quantitative Stool Fat Determination**
9.3  (<6)  gm/24 hours

6. Interpret the above data.

The physician orders a serum IgA antigliadin antibody titer which is elevated.

7. What is your diagnosis based on the given data? Describe the pathology associated with this diagnosis. What is the treatment?

8. Additional laboratory testing in this patient is notable for a hematocrit of 32% and low levels of ferritin and 25-hydroxyvitamin D. Provide an explanation.

Question 9 – Unknown
Students will be provided questions during the small group session.
(hint - features of a gluten free diet will be the focus of the discussion)

Case 3
A 38-year-old woman has a 4-year history of recurrent episodes of days of abdominal bloating with alternating constipation and diarrhea. She notes hard stools of narrow caliber, low volume
diarrhea with mucous, and intermittent pain in the left lower quadrant. Her pain is relieved by having a bowel movement. On physical examination there are no abnormal findings. Laboratory studies including stool for ova and parasites, bacterial pathogens, and fat show no abnormalities. An abdominal CT scan is unremarkable. What is the most likely diagnosis?

A Cystic fibrosis  
B Diverticular disease  
C Inflammatory bowel disease  
D Irritable bowel syndrome  
E Viral gastroenteritis  
F. Chronic pancreatitis

Discuss your rationale.

**Question 4- Unknown – Case data will be provided during the small group session**