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NUT 116BL

Case A
Present illness: GA is a 29 yo F with GERD. She is 5'1" and weighs 130 lbs. Her UBW is 148 lbs. She denies trying to lose any weight.

CC: Chronic indigestion and increased epigastric pain; black tarry stools x six days. Endoscopy revealed two cm duodenal ulcer and generalized gastritis. Biopsy positive for Helicobacter pylori.

Dx: Bleeding duodenal ulcer
Medications: Bismuth subsalicylate – 525 mg qid x 14 d
Metronidazole – 250 mg qid x 14 d
Tetracycline – 500 mg qid x 14 d
Omeprazole – 20 mg bid x 28 d

Labs:
Total protein 5.9 g/dL
Albumin 3.2 g/dL
Prealbumin 22 mg/dL
Hgb 10.5 g/dL
Hct 34%
Ferritin 9 µg/L
WBC 9000/mm3

1. What is Helicobacter pylori and how does it relate to the duodenal ulcer? (2 points)
H. pylori is bacteria that is attached to the mucus-secreting cells lining the stomach. It produces ammonia and protein byproducts that damage mucosal cells and can result in gastritis, causing peptic ulcers.

2. What is the significance of the dark-colored stools? (1 point)
Blood becomes black and tarry when it gets oxidized. Dark colored stools indicate bleeding in either the upper or lower GI tract by the ulcers.

3. How does each of the prescribed medications work? Are there any drug-nutrient interactions that need to be addressed? (4 points)
Bismuth subsalicylate, Metronidazole, and Tetracycline are classified as antibiotics and are combined to treat H. pylori symptoms such as epigastric pain and duodenal ulcers (NTP 362). Alcohol should be avoided with this medication (PR 161). Omeprazole is a proton pump inhibitor used to treat the symptoms of GERD and PUD. High Ca foods should be limited (PR 163) and the medication may decrease Fe and B12 absorption (NTP 450).

4. Compare GA's current lab values with the normal values and describe how each relates to her diagnosis. (3 points)

	GA	Normal	Assessment
Total protein	5.9 g/dL	6.5 – 8.3 g/dL	Low – related to chronic indigestion and malabsorption caused by ulcer (NTP 363)
Albumin	3.2 g/dL	3.5-5.0 g/dL	Low – indicates mild depletion and inflammation (PR 22)
Prealbumin	22 mg/dL	15-36 mg/dL	Normal
Hgb	10.5 g/dL	12-6 g/dL	Low – indicate bleeding related to ulcer and inadequate intake (PR 77)
Hct	34%	37-47%	Low – indicate bleeding related to ulcer and inadequate intake (PR 77)
Ferritin	9 µg/L	10-150 µg/L	Low – indicate iron anemia deficiency related to ulcer (NTP 576)
WBC	9000/mm3	5000-10,000 mm3	Normal – higher end, indicates inflammation (NTP 362)

5. Write an appropriate PES statement for one of the patient's nutrition problems.
(3 points)
Unintentional weight loss (NC-3.2) r/t chronic indigestion and epigastric pain caused by bleeding duodenal ulcer AEB weight loss of 18 lb and positive biopsy for H. Pylori.

Case B
Present illness: MT is a 56 yo M with a long history of alcoholism. He has recently been diagnosed with cirrhosis and portal hypertension. He reports poor appetite with limited po intake. He is 5'8" and weighs 170 lbs. His UBW is 180 lbs.

CC: Fatigue, nausea and early satiety.
Dx: Cirrhosis and portal hypertension
Labs:
Na: 120 mEq/L
K: 5 me/L
Cl: 96 mEq/L
BUN: 24 mg/dL
Glucose: 108 mg/dL
CO2: 25 mEq/L
Cr: 0.7 mg/dL
Albumin: 2.3 g/dL
AST: 87 U/L
ALT: 48 U/L

1. Compare MT's current lab values with the normal values and describe how each relates to his diagnosis. (3 points)

	MT	Normal	Assessment
Na	120 mEq/L	136-145 mEq/L	Low – Associated with liver cirrhosis (PR 80)
K	5 mEq/L	3.5-5.0 mEq/L	Normal (PR 79)
Cl	96 mEq/L	98-106 mEq/L	Low – Related to electrolyte imbalance of decreased plasma sodium by cirrhosis (PR 72)
BUN	24 mg/dL	10-20 mg/dL	High – indicates protein catabolism related to cirrhosis (PR 75)
Glucose	108 mg/dL	65-99 mg/dL	High – indicates insulin resistance related to cirrhosis (NTP 459)
CO2	25 mEq/L	25-30 mEq/L	Normal (PR 111)
Cr	0.7 mg/dL	0.6-1.2 mg/dL	Normal – Lower end indicate muscle wasting (PR 75)
Albumin	2.3 g/dL	3.5-5.0 g/dL	Low – indicates moderate depletion related to hepatic disease (PR 22, NTP 443)
AST	87 U/L	30-40 U/L or less	Both values high – indicates liver damage AST/ALT = 1.8 and is greater than 1 (normal value), indicates damage by alcoholic liver disease (NTP 443)
ALT	48 U/L	7-40 U/L or less	

2. Write the assessment portion of the ADIME note. Please include a brief discussion regarding your choice of equations to estimate nutritional needs. (6 points)
Pt reports poor appetite, limited po intake, early satiety, fatigue, and nausea. Pt has a long history of alcoholism.

56 yo male, Ht 5'8'', Wt 77.3 kg, BMI 25.8 (overweight), UBW 82 kg, %UBW 94%, IBW 70 kg, %IBW 110%

Dx: Cirrhosis and portal hypertension
Labs: Na 120 mEq/L (low), K 5 mEq/L (low), BUN 24 mg/dL (high), Glucose 108 mg/dL (high), Albumin 2.3 g/dL (mild depletion), AST 87 U/L (high), ALT 48 U/L (high)

Requirements:
Kcal: 2200 – 2400 Kcal PRO: 93-116 g Fluids: 2100 – 2450 mL/d

Kcal requirements were calculated using the Mifflin-St. Jeor equation, CBW and an activity factor of 1.4-1.5. I chose CBW since he reports limited po intake and it is important to maintain body weight. AF was chosen because he is most likely sedentary due to fatigue and nausea.

Protein was calculated using his CBW and 1.2-1.5 since his albumin stores are moderately depleted and he has increased protein needs due to cirrhosis and ascites. 92.76 – 115.95 (PR 22)

Fluid needs were calculated used using the 30-35 ml/kg estimation formula. IBW was chosen since MT has signs of ascites and some fluid restriction is needed.

3. List the interventions you would recommend for this patient. (5 points)
Decrease alcohol consumption to less than 1 drink/day
Recommend multi-vitamin supplement
Restrict sodium to <2g/d
Increase oral intake to 2200-2400 kcal and 93-116 g PRO
Limit fat intake <30% kcal/d
Encourage SFMs

4. Which parameters would you monitor to assess the efficacy of your interventions? (2 points)
Albumin, AST/ALT, B Vitamins, FSVS, folate, daily food record, weight

Case C
Present illness: JB is a 21 yo F currently attending UC Davis. She is a swimmer for the UC Davis swim team and trains extensively throughout the year. She is 5'5" and weighs 52 kg. Her UBW is 130 lbs

CC:" I have lost 15 pounds in the past 1-2 months. My stomach hurts a lot, especially after eating. I have been having terrible diarrhea. I don't have the energy I used to. I can't keep up with my swim team training or my school work."

Patient Hx:
Onset of disease: JB is a previously healthy female with no known medical history. Denies family history of gastrointestinal disease but reports that her mother and grandmother have "funny stomachs" and have had diarrhea off and on for most of their adult lives. Over the past six weeks however JB reports she has developed abdominal pain, bloating and loose frequent stools. She reports that she feels very tired lately and is having trouble keeping up with her swim training. She reports that during this time she has been losing weight, approximately 15 pounds in the past 1-2 months. She also reports that she has stopped menstruating.

Physical Examination:
General appearance: thin, very pale appearing female who c/o fatigue, abdominal pain and diarrhea
Abdomen: slightly distended, bowel sounds present
Intestinal Biopsy results indicate flat mucosa with villus atrophy.
Medications: Daily oral birth control

Laboratory values:
Albumin: 3.0g /dl
Prealbumin: 14 mg/dl
Sodium: 137 mEq/L
Potassium: 3.6 mEq/L

Chloride: 100meq/L
Phosphorous: 3.6mg/dl
Magnesium: 1.8mg/dl
Glucose: 75mg/dl

BUN: 10mg/dl
Creatinine: 0.7mg/dl
Calcium: 7.9mg/dl
Iron: 15 mcg/L
Vitamin D 25 OH: 25 nmol/L
AGA antibodies: +
EMA antibodies: +
RBC: 4.9 million cells/ml
Hct: 32%
Hgb: 9.0g/dl
MCV: 65.3mcg3
MCHC: 26.4g/dl
Transferrin: 2.0gL
Ferritin: 8 mcg/L□utrition Hx:

JB states that she has felt very hungry lately but that reports that when she eats large amounts of food she has abdominal pain and diarrhea almost immediately. She notes that fried and fatty foods and dairy products, particularly milk and ice cream, tend to make the diarrhea worse. As a result she has been avoiding these foods and not eating very much because she is afraid of having diarrhea at school.

24 hour recall:
Brk: 2 slices whole wheat toast with 1 tsp butter, 8oz hot tea with 2 tsp sugar.
Lunch: Turkey sandwich (2 slices whole wheat bread, 4 slices turkey lunchmeat, 1 leaf lettuce, no cheese, no mayo or mustard), ½ cup applesauce, 8-10 plain baked potato chips, 12 oz lemon lime soda.
Snack: 1 cup dry cereal (cheerios or wheat Chex), 1 banana, sips of lemon lime soda or water
Dinner: 1 cup chicken noodle soup, 5-6 saltine crackers, 12oz lemon lime soda
Food allergies: none noted

Social:
JB lives in an off campus apartment with 2 female roommates. She prepares her own food but shares kitchenware and dishes with her roommates.

Dx: Celiac disease with secondary malabsorption and anemia.

1. What are AGA and EMA antibodies? Briefly explain the connection between the positive result of these tests and celiac disease. (2 points)
Patients with Celiac disease have a hyper-immune response to the gliadin component in gluten. EGA and EMA antibodies secreted in response to gliadin and trigger inflammatory an response which damages the intestinal mucosa.

2. How do the other lab results (specifically vitamin D and anemia related blood tests) relate to the diagnosis of celiac disease? What other nutrition related labs might you want to check? (2 points)
Damage to the intestinal mucosa can cause lactose intolerance to dairy products resulting in Ca and Vit D deficiencies. Other deficiencies could occur due to malabsorption.
Other lab values to check on are Vit A, E, K, folate, B12

3. Patients with celiac disease are often lactose intolerant prior to dx and remain temporarily lactose intolerant following adherence to a gluten free diet, though this often resolves over time. Explain why this occurs. (2 points)
Prior to dx, the patient is consuming gluten which triggers production of AGA and EMA. Damage to the enterocyte results in reduction of villi height and loss of digestive enzymes. Reduced lactase activity is responsible for lactose-intolerance, causing cramping and diarrhea. Once the patient is on a gluten-free diet, the villi can recover overtime and regain digestive enzymes and tolerance to lactose.

4. Write a complete ADIME note including all necessary components. Please include your calculations on a separate sheet of paper. (15 points)

A: JB is a student swim athlete. Pt reports wt loss of 15 lb in the past 1-2 months. Pt reports abdominal pain, bloating, diarrhea, and fatigue. Pt reports loss of menstruation. No known PMH. 24 hour recall: 1305 Kcal, PRO 14%, Fat 15%, CHO 74%.
Intestinal Biopsy: flat mucosa with villus atrophy

21 yo F, Ht 5'5", Wt 52 kg, IBW 57 kg, %IBW 91%, UBW 59 kg, %UBW 88%, BMI 19.1 (normal)

Dx: Celiac disease with secondary malabsorption and anemia
Medications: Daily oral birth control
Labs: Alb 3.0g /dl, Pre Alb: 14 mg/dl, Ca 7.9mg/dl, Iron: 15 mcg/L, Vitamin D 25 OH: 25 nmol/L, AGA antibodies +, EMA antibodies: +, Hct 32%, Hgb 9.0g/dl, MCV 65.3mcg3, MCHC: 26.4g/dl, Transferrin 2.0g L, Ferritin 8 mcg/L
Requirements:
Kcal: 3000-3500 kcal PRO: 57-68 g Fluid: 1560-1820 ml/d

D:
Inadequate oral intake (NI-2.1) r/t abdominal pain, bloating, diarrhea AEB 24 hour: gluten-containing foods, caffeine, Kcal=1305 (below estimated requirement), and unintentional weight loss of 15 lbs in 1-2 months.

I:

Goals

Life-long restriction of gluten-containing foods and replace with gluten-free foods.
Increase weight by 1-2 lbs a week by next follow-up.

Recommendations

Iron and multi-vitamin supplement
Switch to caffeine- free beverages
Slowly re-introduce dairy into diet after restricting gluten for 3 months

M/E:

Monitor anemia lab values, food log, weight
Follow- up in 1 month, conduct 24 hour recall