Case 22: Depression: Drug-Nutrient Interaction

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1. *What is depression?*

Depression is a very serious condition which ranges in seriousness form mild, temporary sadness to severe depression. Many of the symptoms include feeling sad, and empty, reduced interest or please in most activities, significant weight loss, gain or decrease in appetite, insomnia, restlessness or slowed behaviors, fatigue, feeling of worthlessness, having trouble making decisions, and recurrent thoughts of death or suicide (Mayo Clinic, 2015).

*2. Dr. Byrd has decided to treat Ms. Geitl with Zoloft, a selective serotonin reuptake inhibitor (SSRI). Are there any pertinent nutrition considerations when using this medication?*

A selective serotonin reuptake inhibitor is one of the most common prescribed antidepressants which can help alleviate the symptoms of severe depression. A benefit of an SSRI is that they are generally safe for most patients and are known to cause fewer side effects that most other classifications of antidepressants (Mayo Clinic, 2015). A side effect of a SSRI is nausea and vomiting, therefore it is best to take the medication with food to help reduce the side effects. It may be best to take your medication at bedtime as long as it does not keep you up from sleeping. It is very important to know the drug interactions of certain medications and dietary supplements such as herbal remedies. Also when taking pain relievers with Zoloft they may increase the risk of bleeding so this needs to be monitored by the doctor (Mayo Clinic, 2015).

*3. How do serotonin reuptake inhibitors (SSRIs) work?*

SSRIs are able to work by altering the chemical balance within the body through the use of neurotransmitters. Neurotransmitters are able to communicate with brain cells. SSRIs are able to block the reuptake of the neurotransmitter called serotonin in the brain. When the balance of serotonin in the brain cells is altered from the chemical messages this is able to boost one’s mood. SSRIs only affect serotonin and do not affect any other neurotransmitters. For this reason, SSRIs are known as selective because they only affect serotonin (Mayo Clinic, 2015).

*4. During the diet history, you ask Ms. Geitl if she uses any OTC vitamins, minerals, or herbal supplements. She tells you her mother supplements. She tells you her mother suggested she try Hypericum perforatum (St. John’s wort) because in Germany it is prescribed to treat depression. Ms. Geitl did as her mother suggested, as it is available without prescription in the United States. What is St. John’s wort?*

St. John’s wort is a plant that grows in the wild and has been used for the health benefits for centuries. It is thought that St. John’s wort may be able to help with some types of depression, anxiety, tiredness and sleep trouble but there is no evidence that it is a proven therapy for helping with the adverse affects of depression. Even though in Europe St. John’s wort is widely prescribed for depression, in the United States St. John’s wort is not approved by the Food and Drug Administration (NIH, 2016).

*5. How is St. John’s wort used in the United States?*

In the United States St. John’s wort is not approved by the Food and Drug Administration as as a prescription drug or over-the-counter drug, therefore it is used as an herbal remedy (NIH, 2016). Based on a study by the National Institute of Mental Health found that neither St. John’s wort nor a standard antidepressant medication relieved symptoms of minor depression any better than a placebo did (NIH, 2016). St. John’s wort has shown to interact with a variety of medications that affect their intended purpose which include anti-depressants, birth control, seizure-control drugs, anti-HIV and anticoagulants (NIH, 2016).

*6. How does St. John’s wort work as an antidepressant?*

St. John’s wort contains hyperfornin which is the primary active component responsible for the antidepressant and anxilytic properties. St. John’s wort acts as a reuptake inhibitor of of neurotransmitters including serotonin, norepinephrine, dopamine, GABA and glutamate. Hyperfornin is able to activate the receptors that help transport it across the ion channel and this allows the movement of sodium and calcium into the cell which then results in the reuptake of the neurotransmitters (Drug Bank, 2016).

*7. Does St. John’s wort have any side effects?*

The side effects of St. John’s wort are normally mild. These include stomach upset, hives or other skin rashes, along with fatigue, restlessness, headache, dry mouth, feeling of dizziness and mental confusion. It has also been seen that St. John’s wort makes the skin overly sensitive to sunlight, so it is suggested to wear long sleeves and a hat and apply sunscreen (University of Maryland Medical Center, 2016). Additionally, St. John’s wort has been seen to interfere with getting pregnant or make infertility worse. It can also make the symptoms of ADD and ADHD worse, it can also increase the risk of psychosis in people with schizophrenia, and it can worsen dementia in individuals with Alzheimer’s (University of Maryland Medical Center, 2016). Also taking St. John’s wort with other antidepressant medications tends to increase the side effects and cause serotonin syndrome, which is a large increase in the amount of serotonin in the body (University of Maryland Medical Center, 2016).

*8. How is St. John’s wort regulated in the United States?*

St. John’s wort is not approved by the Food and Drug Administration because it is an herbal supplement (Mayo Clinic, 2015). Under the current regulations St. John’s wort is not regulated as a dietary supplement and manufactures can produce, sell and market the product without demonstration of the safety and the efficacy of the product. St. John’s wort is a natural product made of organic chemicals from raw or processed plants these active ingredients may contain contaminants and even interact with other drugs (National Institute of Health, 2008).

*9. How is St. John’s wort used in Europe?*

In Europe St. John’s wort is widely prescribed to treat mild to serve depression along with many other mental health conditions (NIH, 2016).

*10. Why do you think people are interested in alternative medicine and herbal treatments?*

There is relatively new term called complementary and alternative medicine (CAM) which has been studied by the National Center for Complementary and Integrative Health. CAM is a diverse medical and health care system of practices and products that are not considered conventional medicine (NIH, 2008). In general people are interested in alternative medicine because they feel in general that it is safer than conventional methods because they are natural and have less risk and side effects associated with them. Additionally, individuals who identify a “healthy” or “natural” product or store that it contains products that are less harmful to their bodies. These individuals believe these products are safe, but little do these individuals know these products are not tested or regulated. Using alternative medicine and herbal treatments allow patients to feel that they have more control over their treatment especially when conventional methods have failed.

*11. Because Ms. Geitl is ambulatory, you are able to measure her height and weight. She is 5’ 11” tall and weights 160 pounds. You also determined that she is of medium frame. Because Mr. Geitl is from Germany, she is used to reporting her weight in kilograms and her height in centimeters. Convert her height and weight to metric numbers.*

160 lbs. / 2.2 kg= 72.73 kg

71 inches x 2.54 cm = 180.34 cm

*12. Is Ms. Geitl’s recent weight loss anything to be worried about?*

According to Ms. Geitl’s note in her medical chart she has lost 5 pounds in the last 3 months.

UBW= 100 lbs + (5 x 11)

UBW= 155 lbs

%UBW= ((165-5)/ 155) x 100

%UBW= 160/155 x 100

%UBW= 3%

BMI = wt. (kg) / ht. (cm)2

BMI = [(160 lbs. / 2.2 kg) / (71 in. x 2.54 cm)2]

BMI = 72.23 kg / (180.34 cm)2

BMI = 97.7 kg / (2.09)2

**BMI = 22.3 kg/cm**2

Even with the 5-pound weight loss Ms. Geitl only lost 3% of her usual body weight and therefore the weight loss is nothing to be concerned about. Also Ms. Geitl’s BMI is 22.3 kg/cm2 which falls into the normal category for normal weight. The one concern I see about the weight loss is that Ms. Geitl sated she is not trying to lose weight even though she lost 5 pounds over a 3-month period.

*13. Because Ms. Geitl is alert and cooperative, you ask her to complete a Patient-Generated Subjective Global Assessment (PG-SGA) of Nutritional Status. How would you score her?*

|  |  |
| --- | --- |
| Sections | Score |
| Box 1 | Current Weight: 160 pounds Current Height: 5 feet and 11 inchesOne month ago weight: about 161.6 poundsSix months ago weight: 165 pounds During the past two weeks: Weight has not changed Score= 1 |
| Box 2 | As compared to normal intake, I would rate my food intake during the past month: Less than usual. Normal foods but less than the normal amount Score= 2 |
| Box 3  | Symptoms that I have that kept me from eating enough: No appetite, just did not feel like eatingFatigue Score= 2 |
| Box 4 | Activities and Function: not feeling up to most things, but in bed or chair less than half the day Score= 1 |
| Weight loss section (Table 1) | 1 |
| Disease section (Table 2) | 2 |
| Metabolic section (Table 3) | 2 |
| Physical section (Table 4)  | 1 |
| Total  | 6 |

SGA Rating

|  |  |  |
| --- | --- | --- |
| A= Well Nourished  | B= Moderately (or suspected of being) malnourished X | C= severely malnourished |

*14. Using Appendix I, how would you triage nutritional intervention?*

Based on Nutritional Triage Recommendations with a score of a 6 Ms. Geitl requires intervention by dietitian, in conjunction with nurse of physicians as indicated by symptoms. It would be important that Ms. Geitl’s roommates are also involved in the education that is provided so they are able to help her recover from her depression and begin to consume more food. Her roommates are a great support system for her recovery.

*15. What methods are available to estimate Ms. Geitl’s energy needs?*

The methods that are available to estimate Ms. Geitl’s energy needs include the Mifflin-St. Jeor, the Harris Benedict and the quick estimate methods.

*16. Calculate Ms. Geitl’s basal energy needs using one or the methods you listed in Question 15.*

BMR= 655 + (9.56 x kg) + (1.85 x cm)- (4.68 x yrs) x PAL

BMR= 655 + (9.56 x 72.73) + (1.85 x 180.34)- (4.68 x 20) x 1.5

BMR= (665 + 695.29+ 333.63 – 93.6) x 1.5

BMR= 1600.32 x 1.5

BMR= 2,400.48 kcal

**BMR= 2,400-2,500 kcal**

*17. What is Ms. Geitl’s estimated energy expenditure?*

EER= 10 x wt (kg) + 6.25 x ht (cm) – 5 x age (yrs) - 161

 EER= 10 x 72.73 + 6.25 x 180.34 – 5 (20) - 161

 EER= 727.3 + 1127.13 – 100 - 161

 EER= 1593.43

 EER = 1593.43 x PAL

 EER = 1296.25 x 1.5

 EER= 2,390

 **EER Range= 2,300-2,400kcal**

Carbohydrate= 55% total calories

23500 kcal x .55= 1,292 kcal/ 4 kcal/gram= 323 grams

Protein= 15% total calories

23500 kcal x .15= 352 kcal/ 4 kcal/gram= 88 grams

Fat= 30% total calories

23500 kcal x .30= 705 kcal/ 9kcal/gram= 78 grams

*18. Evaluate her diet history and her 24-hour recall. Is she meeting her energy needs?*

**Usual Dietary Intake**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Carbohydrates (grams) | Protein (grams) | Fats (grams) | Calories |
| **Breakfast-** |  |  |  |  |
| Black coffee- 2 cups | 0 | 0 | 0 | 4 |
| **Lunch-**  |  |  |  |  |
| Diet Cola  | 1 | 0 | 0 | 7 |
| **Dinner-** |  |  |  |  |
| 1.5” square of Stouffer’s lasagna | 23 | 16 | 18 | 316 |
| 1 cup steamed broccoli (plain, only with salt and pepper) | 5 | 2 | 0 | 26 |
| 1 Breadstick | 19 | 3 | 3 | 113 |
| Diet cola soft drink  | 1 | 0 | 0 | 7 |
| **HS Snack-** |  |  |  |  |
| Air-popped sprayed with butter-flavored Pam and salted (1 cup) | 6 | 1 | 0 | 31 |
| Diet cola soft drink  | 1 | 0 | 0 | 7 |
| **Total**  | **56 grams** | **22 grams** | **21 grams** | **511 calories** |

Based on Ms. Geitl’s usual dietary intake she is not meeting her energy needs. She is only consuming 511 calories and she should be consuming 2,5000 kcal per day. From the above chart, she consumed 56 grams of carbohydrates, 22 grams of protein, and 21 grams of fat. Based on this calculation she is only receiving 20% of her caloric needs.

**24-Hour Recall**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Carbohydrates (grams) | Protein (grams) | Fats (grams) | Calories  |
| **Breakfast-** |  |  |  |  |
| 1 cup black coffee | 0 | 0 | 0 | 2 |
| 1 slice dry whole wheat toast | 12 | 4 | 1 | 69 |
| **Lunch-** |  |  |  |  |
| 2 cups chicken and noodle soup | 15 | 6 | 5 | 125 |
| 2 saltine crackers | 4 | 1 | 1 | 25 |
| ½ cup strawberry gelatin | 17 | 1 | 0 | 74 |
| 1 12-oz can diet soda | 1 | 0 | 0 | 7 |
| **Dinner-** |  |  |  |  |
| 2 peach halves | 29 | 1 | 0 | 112 |
| 1 cup cottage cheese (low fat) | 6 | 28 | 2 | 163 |
| 1 cup black coffee | 0 | 0 | 0 | 2 |
| **Total** | **84 grams**  | **41 grams** | **9 grams** | **579 calories** |

Based on the Ms. Geitl’s 24-hour recall she is not meeting her energy needs. She is only consuming 579 calories and she should be consuming 2,500 kcal per day. From the above chart, she consumed 84 grams of carbohydrate, 41 grams of protein, and 9 grams of fats. Based on this calculation she is only receiving 25% of her caloric needs.

*19. What would you advise?*

Based on the nutrition therapy for depression I would start with nutrition education in the hospital setting. As mentioned previously I would also involve Ms. Geitl’s roommates in the nutrition education so they can help heal faster. Also I would suggest the collaboration with mental health professionals, just as Ms. Geitl had a referral to a psychologist for counseling. When I meet with Ms. Geitl I would like to review her weight and then change in weight and address the factors that she felt caused the weight loss. Also I would like to provide the patient with the drug-nutrient information about Zoloft so Ms. Geitl is well informed. I would also like to assist the patient to develop a plan to monitor weight regularly. I would also like to make recommendations to Ms. Geitl about consuming 6 smaller meals throughout the day. I would also suggest more nutrient and calorically dense foods to start off with and then focus on more nutrient dense food and less calorically dense food so she does not gain too much weight over a period of time (Nelms, 620).

*20. List each factor form your nutritional assessment and then determine and expected outcome from each.*

|  |  |
| --- | --- |
| Assessment Factor | Expected Outcome  |
| No appetite | Increase patient’s caloric intake by encouraging small meals throughout the day. Also suggest preparing meals in advance because of patient’s busy schedule as a college student.  |
| Insufficient vitamin and mineral intake | Prescribe daily multivitamin and encourage the consumption of fresh fruit and vegetables.  |
| High consumption of caffeinated beverages  | Decrease the amount of caffeine beverages throughout the day and increase the amount of calorically dense beverages such as a protein shake or smoothie. Also encourage hydration by drinking water between meals.  |
| Regular diet order  | Patient has not had previous nutrition education and may need assistance in selection foods that are appropriate for her diet and are calorically dense to help her gain weight.  |

*21. What is your immediate concern regarding this patient’s use of St. John’s wort?*

My immediate concern regarding Ms. Geitl’s consumption of St. John’s wort is the interaction with the the Zoloft (50 mg qd). While taking St. John’s wort and Zoloft it is likely that she will have too much serotonin in her body and therefore she will experience serotonin syndrome. I would first recommend that she stop taking the St. John’s wort and only take the Zoloft. I would also suggest that she consult with her doctor about this change in medication (Mayo Clinic, 2016).

*22. Review the initial nutrition note written for the patient. Is this progress note appropriate? Is it complete? Any errors? Any omissions?*

A soap note states for subjective, objective, assessment and plan section. I believe the dietitian did provide the basics to the note but there are some areas that need to be expanded upon. It needs a little more detail. In the subjective section the RD did not put the patient’s occupation but instead she put it in the objective section. Also the RD did not include that the patient’s country of origin along with her current moodiness and lack of motivation. The information that was in the subjective section that focused on the patient’s diet history and 24-hour recall should have been put under the objective section of the note. A portion of the chart note that was left out was the patients ethnicity and calculated BMI. In the assessment section of the chart note the RD did state the clinical diagnosis along with the etiology, signs and symptoms of the clinical depression. In the plan section of the chart note the RD did mention a few plans of action but I think it would be necessary to address decreasing smoking cessation, add the referrals that were made to the psychologist. Also in the plan section the RD should have included a specific nutrition plan along with the goals that she has for the patient and ways that the goals will be evaluated. Although this chart note is written as a SOAP, I may suggest to the dietitian to use and ADIME format to provide a more complete chart note which many other dietitians also use (Nelms, 109).

Resources

Drug Bank (2016). Hyperforin. <http://www.drugbank.ca/drugs/DB01892>

National Institute of Health (2008). Herbal Medicine in the United States: Review of Efficacy, Safety, and Regulation. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2517879/>

National Institute of Health (2016). St. John’s Wort. <https://nccih.nih.gov/health/stjohnswort/ataglance.htm>

National Institute of Health (2016). St. John’s Wort and Depression: In Depth. <https://nccih.nih.gov/health/stjohnswort/sjw-and-depression.htm>

Mayo Clinic (2015). Depression. <http://www.mayoclinic.org/diseases-conditions/depression/expert-answers/clinical-depression/faq-20057770>

Mayo Clinic (2015). Selective serotonin reuptake inhibitors (SSRIs). <http://www.mayoclinic.org/diseases-conditions/depression/in-depth/ssris/art-20044825>

University of Maryland Medical Center (2016). St. John’s wort. <http://umm.edu/health/medical/altmed/herb/st-johns-wort>