CASE REPORT: nUTRITIONAL MANAGEMENT OF Pancreatitis & PANCREATIC PSEUDOCYST

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**Abstract**

This paper describes the case of a 61 year old man with HIV infection, diagnosed with pancreatitis and a pancreatic pseudocyst. The patient presented to the hospital with abdominal pain, nausea and vomiting and had previously been admitted one month prior for similar symptoms. During this time, the pancreatic pseudocyst was evident but not large enough to drain. At the time of his most recent admission, the patient was living at home and on total parenteral nutrition (TPN) and a clear liquid diet, scheduled for a follow-up with a primary and specialty care provider. During the patient’s hospital stay, it was determined that the pancreatic pseudocyst was 9.3 x 7.1 x 12.3 cm, large enough to drain. A cystogastrostomy for pseudocyst and cholecystectomy were performed. Total Parenteral Nutrition and a clear liquid diet were maintained prior to surgery with the TPN requiring adjustments based on glucose and triglyceride lab levels. The TPN and clear liquid diet were continued until the patient was able to advance to solid foods and increase oral intake. At this time, TPN was decreased and eventually discontinued. The patient developed a case of chronic hiccups and attempted to increase his oral intake. The patient was discharged to Genesis Patapsco Valley Center skilled nursing/subacute facility for rehabilitation.

**Disease Description**

 Pancreatitis is inflammation of the pancreas and can be categorized as acute or chronic and can stem from many different etiologies including chronic alcoholism, biliary tract disease, hypertriglyceridemia, certain drugs, some viral infections, trauma, and gallstones. The clinical symptoms typically seen with pancreatitis include abdominal pain and distension, nausea, vomiting and steatorrhea. Tests that are used to determine the severity of pancreatitis include the secretin stimulation test, glucose tolerance test and the 72-hour stool test.1 Patients with acute pancreatitis will typically exhibit abdominal distension, tenderness in the upper part of the abdomen, lack of bowel sounds and sometimes a pseudocyst that can be felt upon examination. Pseudocysts are commonly drained when associated with pain, infection or blockage of the gastric outlet or biliary tract. It is recommended that decompression of the pseudocyst take place for patients with symptoms, which can be done by endoscopic or surgical cystogastrostomy.5 In addition to pseudocysts, additional pancreatic infections that are seen with pancreatitis include pancreatic ascites, and pancreatic abscess. Patients who are unable to tolerate an oral diet are given either enteral or parenteral nutrition. Nutrition support in patients with pancreatitis has been shown to play an important role in preventing complications and promoting recovery.4

**Case Presentation**

 This case examines a 61 year old male admitted to the hospital for abdominal pain, nausea and vomiting. The patient had an extensive history of pancreatitis with pancreatic pseudocyst. His history also includes abdominal pain, splenic vein thrombosis, streptococcal meningitis, gout, hypertension, HIV, right lower lung pulmonary nodule, and deep vein thrombosis. Upon admission, the patient had an elevated lipase of 477 and was experiencing tachycardia, with a heart rate of 143.3

**Antiretroviral Drugs and Acute Pancreatitis**

The association between antiretroviral drugs and acute pancreatitis in HIV/AIDS patients has been studied. According to one literature review, antiretroviral drugs are effective in treating patients with HIV/AIDS but their toxicity can lead to drug-induced pancreatitis. There are many commonalities that have been seen among patients that are HIV-positive and develop acute pancreatitis, some of which include non-white race, advanced age, long duration of seropositivity, CD4<2000 cells/mm3, AIDS diagnosis, high viral load, previous history of acute pancreatitis, hepatobiliary diseases, opportunistic infection prophylaxis, and alcohol abuse. Although more evidence is needed to determine if there is a direct relation between pancreatic morbidity and HAART therapy, it is important to always consider antiretroviral drug-induced pancreatitis in the diagnosis of patients with abdominal pain and elevated pancreatic enzymes.2

**Nutrition Care Process: Assessment**

 **Client History:** The patient was seen previously in December, 2015 for abdominal pain, nausea and vomiting and was found to have pancreatitis, attributed to his highly active anti-retroviral (HAART) medications. The patient was discharged to a rehab center, and readmitted to the hospital two days later, where he was found to have a pseudocyst, pancreatitis, and also development of deep vein thrombosis. During this admission, the pseudocyst was unable to be drained because it did not meet the size requirements. The patient was sent home on a clear liquid diet and TPN with scheduled follow-ups with his primary and specialty care providers. Upon admission, on January 18, 2016, he had not followed up with his providers and was still on TPN and a clear liquid diet. The patient came from home and does not smoke tobacco, drink alcohol, or use illicit drugs. He has 2 brothers and a sister. The patient has one sister who was touring new facilities in preparation for when he was discharged.3

 **Food/Nutrition-Related History:** At home, the patient was on a clear liquid diet and cyclic TPN. Relevant medications upon the initial assessment included normal saline @75 ml/hour, atovaquone, sliding scale insulin, reglan, protonix, and the following as needed: docusate, dilaudid and zofran. These medications addressed increased blood sugar from the TPN, acid reflux, nausea, constipation, and pain. The normal saline was to prevent dehydration.3

 **Nutrition Focused Physical Findings:** Due to persistent vomiting, the patient was unable to keep food down, thus, decreasing his appetite. The patient did not have any difficulty with chewing or swallowing.3

 **Anthropometric Measurements:** The patient’s weight and height upon admission were 93.6 kg and 181 cm. respectively, with a Body Mass Index (BMI) of 28.6, which classified him as overweight. The weight history, going back to December, 2015, 104.3 kg and November, 2015, 111.1 kg, shows an overall weight loss of approximately 17% over a 2 month period.3

 **Biochemical Data, Medical Tests, and Procedures:** As mentioned, the patient was receiving TPN prior to being admitted to the hospital and was on a custom TPN formula. It was decided to continue the TPN formula in the hospital so it was important to monitor electrolytes, triglycerides and glucose as needed. Upon the initial assessment, the labs that were documented included glucose, magnesium, phosphorus, triglycerides and albumin. Various lab values were documented as necessary with each follow-up. The lab values can be seen in the appendix.3

 **Nutrient Needs:** The patient’s nutrient needs were estimated using the Mifflin St. Jeor nutrition equation. This equation was selected as it has been shown to be the most accurate in estimating the REE (resting energy expenditure) in both normal and obese people**.**1The estimated nutrient needs calculated were 2,130-2,308 kcal/day, 110-131 gm/day protein and 2,350 ml fluid/day.3

 **Aramark Nutrition Care Level:** Based on Aramark’s Policy and Procedure for determining the nutrition care level, this patient was leveled at a 3 based on NPO status > 4 days, acute pancreatitis, weight loss of approximately 16% over a two month period and TPN.

 **Malnutrition Identification:** The nutrition-focused physical assessment was deferred. The patient was clearly nauseas upon the initial assessment and was in no condition to have a physical assessment completed.

**Nutrition Care Process: Nutrition Diagnosis**

 Nutrition Diagnosis: Altered GI Function (NC 1.4) as evidenced by pancreatic pseudocyst related to nothing by mouth (NPO), TPN dependent3

**Nutrition Care Process: Interventions**

*Medical Interventions****:*** A CAT scan of the abdomen was performed and showed enlargement of a cystic mass centered in the pancreatic and duodenal groove, measuring 12.3 cm. This was a complication related to pancreatitis. Surgery was performed on January 21st. A cystogastrostomy and cholecystectomy was performed. It is recommended that decompression of the pseudocyst take place for patients with symptoms which can be done by endoscopic or surgical cystogastrostomy.5

 *Nutritional Interventions****:*** The nutritional intervention for this patient was to initiate parenteral nutrition. As mentioned, the patient was put on TPN in December, 2015, due to GI absorption impairment and was still on TPN upon admission. The nutritional intervention was to continue with TPN as his abdominal pain and nausea had not resolved since his last admission and he had not followed up with his gastroenterologist. It was decided to continue with TPN while tests were completed to determine the plan of care. The plan was to initiate TPN at 90 ml/hour x 1 hour then 180 ml/hour x 10 hours then, 90 ml/hour x 1 hour, in addition to lipids two times weekly. The TPN provided 1785 kilocalories, 130 grams protein and 330 grams carbohydrates, meeting 83% of the patient’s calorie needs and 100% of protein needs. This TPN regimen was what he was utilizing at home since his last admission in December, 2015. The goal was to tolerate parenteral nutrition at goal.3

**Nutrition Care Process: Monitoring and Evaluation**

 Monitoring of the patient included parenteral nutrition tolerance, lab results, weight, intake and output. Follow-ups were performed on January 20th, January 22nd, January 26th, January 29th, and January 30th. The PES statements, nutrition interventions performed and goals set for each follow-up are shown below.

 **January 20th** – The plan of care was discussed with the physician assistant. The plan was to infuse TPN formula over 24 hours to decrease the final dextrose concentration. The patient was experiencing hyperglycemia related to TPN and pancreatitis/pseudocyst, with no previous history of diabetes mellitus. The Physician Assistant started Lantus the day before but the patient’s blood glucose increased exponentially during the TPN cycle. The Lantus dose was increased and the sliding scale insulin changed to the highest dose.3

 **January 22nd** – The serum triglycerides were severely elevated and the plan was to recheck triglycerides on Monday. *PES Statement*: Less than optimal parenteral nutrition (NI 2.8) related to hyperglycemia, hypertriglyceridemia as evidenced by serum glucose and triglyceride level. It was decided to add twenty grams of insulin to the TPN at 9:00 p.m. The patient was to be monitored for parenteral nutrition tolerance, lab results, weight, intake and output. The goal was to tolerate parenteral nutrition at goal within one to two days.3

 **January 26th** – The plan was to continue with the current nutritional plan. *PES Statement*: Less than optimal parenteral nutrition (NI 2.8) related to hyperglycemia, hypertriglyceridemia as evidenced by serum glucose and triglyceride level. The patient was monitored for parenteral nutrition tolerance, lab results, weight, intake and output.3

 **January 29th** – The TPN rate decreased to 50 ml/hour on 1/27/16. TPN provides 165 g carbohydrate, 893 calories, and 65 grams protein in 1.2 liter volume and is meeting 42% of patients calorie needs and 50% of patients protein needs. *PES Statement*: Inadequate oral intake (NI 2.1) as related to decreased appetite as evidenced by hiccups and reported by mouth (PO) intake. The recommendation was to continue TPN until the patient’s food intake by mouth improved. Ensure Complete nutritional supplement was added twice a day to provide 350 calories and 13 grams of protein daily. Nutrition Management recommendations include increased calories and adequate protein intake.1 The patient was monitored for diet tolerance, supplement tolerance, parenteral nutrition tolerance, lab results, weight, intake and output. The goal was to increase oral intake to 50-75% of meals/supplements within 3 days.3

 **January 30th** – The plan was to discontinue TPN with close monitoring of the patient’s diet tolerance with a recommendation for a carbohydrate controlled, low residue diet (limits fat and fiber) without overly limiting patient’s food choices. Nutrition management recommendations include a low-fat diet, with easily digestible foods.1 *PES Statement*: Inadequate oral intake (NI 2.1) as related to decreased appetite as evidenced by hiccups and reported by mouth (PO) intake*.* The patient was monitored for diet tolerance, supplement tolerance, parenteral nutrition tolerance, lab results, weight, intake and output. The goal for the patient was to increase oral intake to 50-75% of meals/supplements within 3 days.3

 **February 3rd** – The patient was discharged to Genesis Patapsco Valley Center, a skilled/subacute nursing facility. At the time of discharge, the patient continued to have hiccups and was eating a little at each meal.3

**Conclusion**

This was an interesting case study as I was not familiar with a pancreatic pseudocyst and this patient had an extensive medical history. It was interesting to see the process of trial and error in trying to manage the patient’s labs with his TPN. It was also interesting to learn the association between pancreatitis and the HAART medications. I do hope that this patient followed up with his physician upon leaving the hospital and is doing well at home.

**Appendix**

**Anthropometric Measurements:**

|  |  |
| --- | --- |
|  | Weight (kg) |
| 1/27/16 | 100.4 |
| 1/25/16 | 102.4 |
| 1/22/16 | 98.3 |
| 1/21/16 | 94.9 |
| 1/20/16 | 90.0 |
| 11/24/15 | 111.1 |

**Biochemical Data, Medical Tests, and Procedures**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Lab Value | Sodium | Potassium | CO2 | BUN | Creatinine | Glucose | Phosphorus | Triglycerides | Albumin | Magnesium | Pre-Albumin |
| 1/18/16 |  |  |  |  |  | 126High | 2.9 | 291High | 3.2 | 1.8 |  |
| 1/20/16 |  |  |  | 20Low | 1.51High | 611Critical |  |  |  |  | 12.3Low |
| 1/22/16 | 140 | 3.8 |  | 22High | 1.61High | 336High | 1.9Low | 343High | 1.9 |  |  |
| 1/26/16 |  | 3.2Low |  |  | 1.43High |  | 2.3Low | 252High | 1.7Low |  | 5Low |

**Nutrient Needs:**

Assessment Weight: 94 kg

Gender: Male

Weight used for Assessment: Current Weight

Nutrition Patient’s Age: 61 years

Nutrition Mifflin St. Jeor: 1,775

Basal Energy Needs: 1,775

Nutrition Activity Factor 1: 1.2

Activity Factor 2: 1.3

Kcal/d for Activity Factor 1: 2,130 Kcal/day

Kcal/d for Activity Factor 2: 2,308 Kcal/day

**Protein Needs:**

Assessment Wt 1: 73 kg

Grams/kg: 1.5 gm/kg

Grams/kg: 1.8 gm/kg

Calculated protein needs 1: 110 gm/day

Calculated protein needs 2: 131 gm/day

**Fluid needs:**

Nutrition Assessment Wt: 94 kg

Ml/kg 1: 25 ml/kg

Calculated fluid needs 1: 2,350 ml/day

**References**

1. Mahan, LK, Escott-Stump, S, Raymond, JL, Krause, MV. *Krause's food & the nutrition care process*. St. Louis, MO: Elsevier/Saunders; 2012.
2. National Institutes of Health. US National Library of Medicine Website. <https://www.nlm.nih.gov/medlineplus/ency/article/000272.htm>. Accessed March 6, 2016.
3. Oliveira N, Ferreira F, Yonamine R, Chehter E. Antiretroviral drugs and acute pancreatitis in HIV/AIDS patients: is there any association? A literature review. *Einstein (São Paulo)*. 2014;12(1):112-119. <http://www-ncbi-nlm-nih-gov.ezp.welch.jhmi.edu/pubmed/24728257>
4. Powerchart. Northwest Hospital. Accessed January 20, 2016.
5. Siow, E. Enteral versus Parenteral Nutrition for Acute Pancreatitis. *Critical Care Nurse*. 2008;28(4):19–30. Available at: http://ccn.aacnjournals.org/content/28/4/19.full. Accessed February 19, 2016.
6. Varadarajulu, S., Bang, J., Sutton, B., Trevino, J., Christein, O., & Wilcox, C. M. (2013). Equal Efficacy of Endoscopic and Surgical Cystogastrostomy for Pancreatic Pseudocyst Drainage in a Randomized Trial. *Gastroenterology,* *145*(3). Retrieved February 21, 2016.