

# Cystic fibrosis and pancreatitis patient case study



**ASSIGN  
BUSTER**

## Patient Case Study Analysis

Cystic Fibrosis (CF) is an autosomal recessive inherited disorder involving fluid secretions by the exocrine glands of the respiratory, gastrointestinal, and reproductive tracts (Porth, 2015, p. 583). According to Porth (2015), these secretions can cause buildup in the lungs, resulting in chronic respiratory issues, as well as defects of the digestive system. CF is a resultant of a mutation in the single gene Cystic Fibrosis Transmembrane Conductance Receptor (CFTR), which impairs chloride transport, reabsorption, and subsequently, sodium reabsorption (Porth, 2015, p. 584). Being said, patients are at risk for incidences of salt depletion, because sodium chloride is excessively excreted through sweat glands. Porth (2015), states this disease process causes dehydration of mucous layers in human tissues and in turn, sticky secretions accumulate and obstruct the airways and ducts inside the affected body.

One of these obstructed areas can be the pancreatic duct. When the pancreatic duct is obstructed, acute and sometimes chronic pancreatitis can result. Acute pancreatitis is a disease resulting in a reversible inflammation of the pancreas, which is caused by the digestive enzymes activating inappropriately (Porth, 2015, p. 748). With the improper enzyme activity, an autodigestion of the pancreas begins to occur, causing major tissue harm. Obstruction of the biliary tract, obstruction of the pancreatic duct, and biliary reflux can all affect the activation of the enzymes. According to Porth (2015), this process can be associated with numerous factors, including alcohol abuse, gallstones, hyperlipidemia, hypercalcemia, infections, abdominal trauma, surgery, and a variation of pharmaceuticals containing

thiazide. Acute pancreatitis can potentially progress to the chronic form, where episodes of the disease are recurrent, and the tissue damage of the pancreas is permanent (Porth, 2015, p. 749).

### Background and Significance

The patient, J. T., is a 27-year-old male who was diagnosed with CF at the age of five years old. J. T. came to the hospital with complaints of left, mid-portion back pain, nausea, and vomiting. The pain started approximately a week ago as an ache in his back and progressed to a severe stabbing pain that radiated to his left flank. The patient stated he was vomiting last night and had firm, now diarrhea, yellow stools. He has had no weight loss and no loss in appetite. There are no complaints of pulmonary involvement on admission.

The patient has a history of a liver transplant, due to hepatic fibrotic disease and cirrhosis, banded esophageal varices, a cholecystectomy, a right upper lobe lobectomy due to *Aspergillus* infection, and has chronic pancreatitis. He also had multiple polypectomies to remove nasal polyps and has a history of diabetes mellitus. J. T. has a BMI of 43 and suffers from sleep apnea, requiring continuous positive airway pressure (CPAP) while sleeping. He was admitted to the hospital one month ago for scheduled pulmonary toileting.

J. T. reports that he does not smoke, hardly drinks, and does not use illicit drugs. He is allergic to ceftin and sulfa drugs. The patient does not exercise and admits to having a sedentary lifestyle and a diet high in calories and fat.

### Patient Profile

<https://assignbuster.com/cystic-fibrosis-and-pancreatitis-patient-case-study/>

As previously mentioned, CF is an autosomal recessive inherited disorder, resulting in a mutation of the single gene CFTR (Porth, 2015, p. 584). According to Rout-Pitt et al., (2018), this gene encodes for a protein responsible for ion transport out of epithelial cells, and with CF, this process is interrupted and leads to dehydration of the tissues. This dehydration can result in infection, obstruction, inflammation, and overgrowth/scarring of various tissues. J. T. reportedly had a liver transplant in 1996, as result of hepatic fibrotic disease and cirrhosis, which could be secondary to the CF. The patient also had a right upper lobectomy in 2009 due to *Aspergillus* and multiple polypectomies. This is common in patients with CF because the constant cycle of infection and inflammation leads to fibrosis of the airways, making it difficult to filter out pathogens (Rout-Pitt et al., 2018).

Dehydration of the mucus layer of these tissue cells is not limited to one area of the human body. Just as fibrosis can occur in the liver and the airways, it can also occur in the biliary and pancreatic ducts. The lower water content of the mucus coating causes the tissues to be sticky and accumulate, resulting in buildup or obstruction (Porth, 2015, p. 584). This disrupts the natural digestive process of the bile ducts, pancreas, and liver by falsely activating the associated enzymes. With insulin being produced in the pancreas, if there is damage to any part of the pancreatic system, then there will be inadequate insulin production and as a result, diabetes.

Although cystic fibrosis typically affects the absorption of nutrients in the digestive system, J. T. is morbidly obese. This is possible due to the patient's extremely sedentary lifestyle, of which is evidenced by unemployment, a diet high in calories and fat, a family history of obesity, and not exercising.

<https://assignbuster.com/cystic-fibrosis-and-pancreatitis-patient-case-study/>

All these factors combined are prominent enough to result in obesity, regardless of the malabsorption issues cystic fibrosis patients commonly have.

### Physical Assessment and Diagnostic Data

With pancreatitis, it is expected to have elevated serum amylase and lipase. For J. T., his amylase was normal at 41 U/L, but his lipase was elevated at 124 U/L. This is a common occurrence because according to Porth (2015), lipase may remain elevated longer than amylase. The patient also had an elevated alkaline phosphatase value of 367 U/L. This is typically prevalent in someone with liver or bile issues. If there is a blockage in the bile duct, this can then lead to pancreatic dysfunction because the two systems work together to breakdown and absorb nutrients. Amylase and lipase are then eliminated through the kidneys. With J. T.'s glomerular filtration rate being reportedly low at 52 ml/min, these enzymes will remain elevated in the blood longer. The patient also has report of mild anemia, which could relate to the malabsorption and improper digestion from the pancreatitis.

J. T.'s physical exam was significant to his diagnosis because according to Kornusky and Caple (2018), determination of acute pancreatitis is made upon on the presence of at least two of three findings: severe abdominal pain, laboratory values showing at least three times the amount of standard amylase and lipase, and imaging exemplifying an abnormal pancreas. The patient does have presence of these findings. Further review of systems was important to rule out any additional findings relating to a different health concern.

The patient's elevated alkaline phosphatase is a diagnostic of high concern because this could translate to an issue with the liver function. The computed tomography (CT) supports this elevation by revealing a lobular appearance to the liver and splenomegaly. These findings could put the patient at risk for another transplant. Elevated lipase and the CT findings of peripancreatic fat stranding are of high concern as well because if there is prolonged inflammation or recurrence of the irritation, the organ tissue can eventually lose its blood supply and become necrotic (Porth, 2015, p. 749).

J. T. takes Veramyst nasal spray twice a day to reduce inflammation from his recent nasal polypectomy. The patient reportedly takes Pancrelipase and remains compliant with anti-rejection medication, cyclosporine. To control the diabetes, the patient takes Levemir insulin. J. T. nebulizes with bronchodilators, Duo-Neb, three times a day and a mucolytic, Pulmozyme, once daily. This medication regimen is crucial to adhere to because not complying will minimize the benefits of the drugs for the patient, could cause the patient to experience unpleasant side effects, and could lead to the diseases progressing even worse.

### Clinical Course

Treatment for pancreatitis typically involves rest, hydration, pain relievers, antibiotics if there is an infection, and nutrition changes. Upon admission, J. T. was started on a normal saline drip at 60ml/hr and restricted to only ice chips by mouth. Receiving fluids helps prevent and treat the dehydration associated with the inflamed pancreas, as well as guarantee the rest of the body is maintaining enough blood flow (Risks and Treatment, 2019). The

patient was prescribed Dilaudid 0.5 mg IV every four hours as needed for the back pains and aches reported upon admission. Zofran 4 mg IV as needed was also ordered due to the patient's complaint of persistent nausea and vomiting. Due to the swelling and slowing of the digestive system with pancreatitis, nausea is a common occurrence and will resolve as the pancreas heals (Risks and Treatment, 2019). The last drug ordered was Protonix 40 mg IV every morning to reduce stomach acid production and reflux. When pancreatic function is impaired, gastric acidity may increase and could lead to rupturing of the esophagus and peptic ulcers if left untreated.

One nursing diagnosis associated with this patient is acute pain. Acute pain related to inflammation of the pancreas, as evidenced by tenderness in the right and left upper quadrants upon palpation, patient self-reports of nausea/vomiting during the past 24 hours, and firm, yellow to green stools, which have recently progressed to yellow diarrhea. Interventions from the nurse include assessing the pain using a self-report 0-10 numerical pain rating scale and establishing a comfort goal, as well as administering supplemental medications as ordered to keep the pain at or below the comfort goal established (Ackley, 2017, p. 642). Another intervention would be teaching the patient nonpharmacologic methods to use when the pain is relatively controlled with the medications (Ackley, 2017, p. 643). An additional nursing diagnosis is deficient knowledge. Deficient knowledge related to insufficient information and interest, as evidenced by the patient's sedentary lifestyle and diet high in calories and fat. Interventions for this diagnosis consist of nutritional teaching with reinforced learning through

repetition and follow-up sessions, as well as using technology and multimedia approaches for distributing the information as necessary (Ackley, 2017, p. 556). It is also important for the nurse to encourage the patient to expand or maintain supportive social networks when incorporating these lifestyle changes.

Aside from the presented health conditions, the patient is at risk for additional problems related to the morbid obesity. J. T. could develop hypertension, coronary artery disease, stroke, chronic kidney disease, heart attack, osteoporosis, and even death. The patient is also putting himself at risk for another transplant if he does not begin to be proactive about his current situation.

## Conclusion

Cystic fibrosis is an inherited condition and is out of any patient's control. Managing this disease can be extremely exhausting and opens the doors to secondary conditions. Unfortunately for J. T., he is dealing with multiple health complications most likely caused by the CF, one being pancreatitis. Pancreatitis can be treatable or manageable, and with proper maintenance and lifestyle changes, the patient can prevent reoccurrence.

## References

- Ackley, B., & Ladwig, G. et al. (2017). *Nursing diagnosis handbook: An evidence-based guide to planning care* (11th ed). St. Louis, MO: Mosby Elsevier.
- Kornusky, J., & Caple, C. (2018). *Pancreatitis, Acute*. *CINAHL Nursing Guide*. Retrieved from [https://ju.idm.oclc.org/login?url=](https://ju.idm.oclc.org/login?url=https://assignbuster.com/cystic-fibrosis-and-pancreatitis-patient-case-study/)

<https://assignbuster.com/cystic-fibrosis-and-pancreatitis-patient-case-study/>



<https://search.ebscohost.com/login.aspx?direct=true&db=ccm&AN=T700324&site=ehost-live>

- Porth, C. M. (2015). *Essentials of pathophysiology: Concepts of altered health states*. Philadelphia: Wolters Kluwer.
- Risks and Treatment. (2019). Retrieved from <https://pancreasfoundation.org/patientinformation/acute-pancreatitis/acute-pancreatitis-risks-and-treatment/>
- Rout-Pitt, N., Farrow, N., Parsons, D., & Donnelley, M. (2018). Epithelial mesenchymal transition (EMT): a universal process in lungs diseases with implications for cystic fibrosis pathophysiology. *Respiratory Research, 19* (1), N. PAG. <https://doi-org.ju.idm.oclc.org/10.1186/s12931-018-0834-8>

The assignment will be graded using the following criteria:

#### *Patient Case*

<i>Analysis</i>	<i>Possible</i>	<i>Earned</i>
<i>Assignment</i>	<i>Score</i>	<i>Score</i>
<i>Grading Criteria</i>		

Answers to 25

Questions 10

- Demonstrate 10  
s critical  
analysis 5
- Comprehensi

ve/complete

- Supported  
by  
references

Format

- Follows APA  
format 5
- Correct  
grammar/sp  
elling

Total Score 30