Pancreatitis

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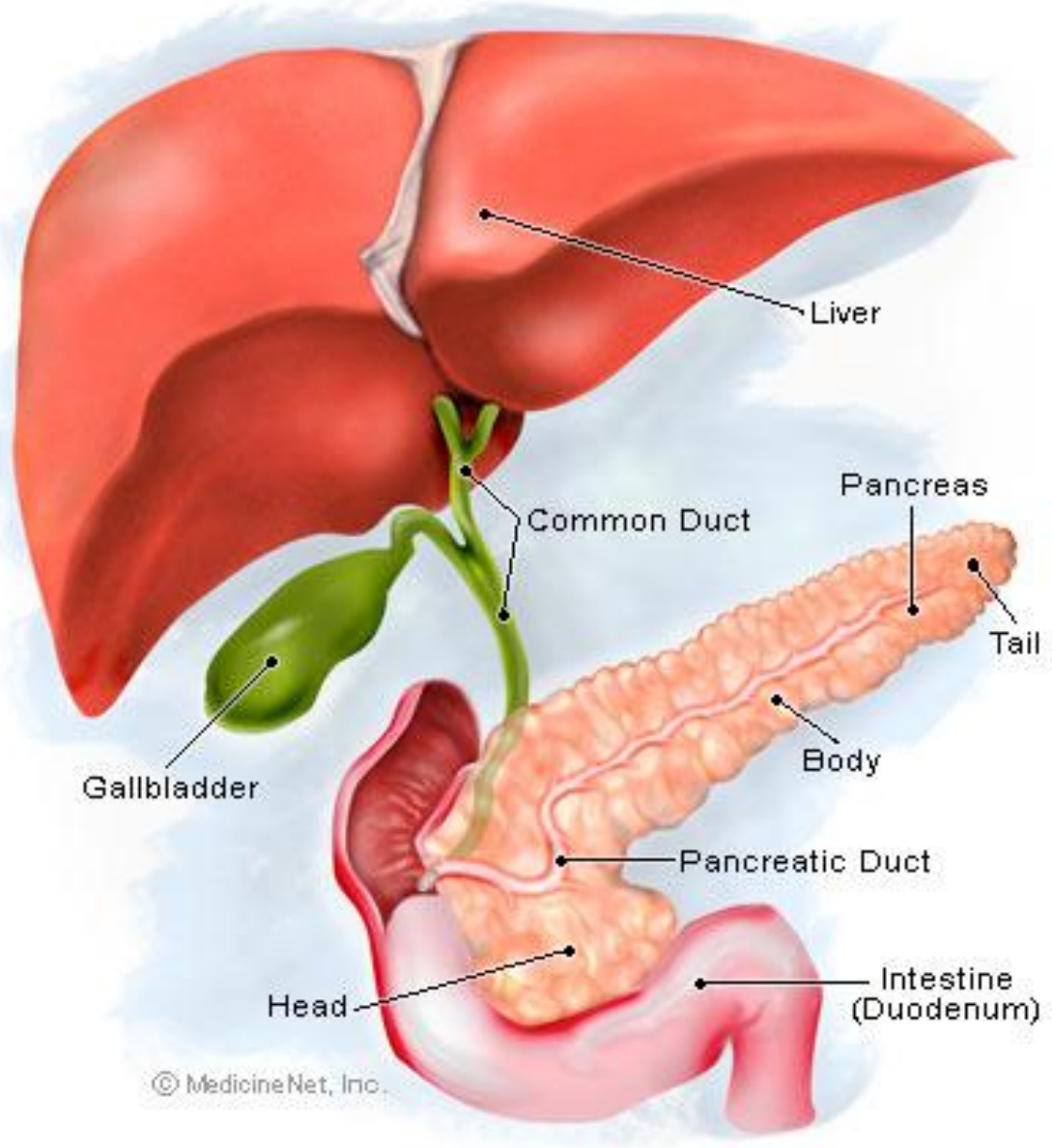
Your Pancreas

- A gland organ
- Only organ that has both exocrine and endocrine functions.
- Divide into different portions: the head, neck, body, and tail.
- Major functions:
  - Exocrine function: produce enzymes necessary for digestion. Ex:Lipase
  - Endocrine function: produces hormones to regulate the use of body fuels, mainly glucose.


Liver
Pancreas
Common Duct
Tail
Gallbladder
Body
Pancreatic Duct
Head
Intestine
(Duodenum)
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Pancreatitis

- What is pancreatitis?
  - An inflammation of the pancreas
  - Can be either acute or chronic
  - The disease is characterized by edema, auto digestion, fat necrosis, and hemorrhage of pancreatic tissue.

Common Causes

- Gallstones
- Alcohol
- Hypertriglyceridemia
- Endoscopic retrograde cholangiopancreatography(ERCP): is a technique that combines the use of endoscopy and fluoroscopy to diagnose and treat certain problems of the biliary or pancreatic ductal systems such as gallstones
- Trauma
- Postoperative(abdominal and non abdominal operations)
- Drugs (azathiprine, 6-mercaptopurine, sulfonamides, estrogens, tetracycline, valproic acid, anti-HIV medications)
- Sphincter of Oddi dysfunction

Acute Pancreatitis

- Acute pancreatitis is a sudden inflammation of the pancreas that occurs over a short period of time.
- It occurs when pancreatic enzymes are prematurely activated, leak into surrounding tissue, and begin the digestive process before reaching the intestines.
- In more than 80 percent of the cases, acute pancreatitis is caused by bile duct stones or heavy alcohol use.
- Aggressive hydration is the most important and effective intervention for early restoration of all systems.

Acute Pancreatitis Stages

- Mild AP is characterized by a swollen pancreas and minimal exudates that typically resolve within a few days.
- Severe AP is distinguished by systemic circulation of toxins
- Toxins cause progressive development of bleeding, pancreatic necrosis, and early complications:
  - e.g. visual disturbances, metabolic disturbances, changes in mental status, acute fluid collections, renal failure, cardiovascular collapse, respiratory failure

Acute Pancreatitis Symptoms

- Upper abdominal pain that radiates (spreads) to their backs.
- abdomens may be swollen and very tender
- Nausea, vomiting, fever, and an increased heart rate.

Labs for Acute Pancreatitis

- AP commonly causes an abnormal elevation in
  - WBC count, hematocrit, and BUN
  - Triglycerides and serum electrolytes (e.g., potassium, sodium)
  - C-reactive protein (≥ 10 mg/dL 48 hours post-onset indicates severe AP)
  - Aspartate aminotransferase [AST], lactate dehydrogenase [LDH], bilirubin, alkaline phosphatase, alanine aminotransferase

Chronic Pancreatitis

- Chronic pancreatitis occurs most commonly after an episode of acute pancreatitis and is the result of ongoing inflammation of the pancreas.
- It is characterized by progressive, irreversible damage to pancreatic structure.(not curable)
- As the disease progresses, patients can develop insulin-dependent diabetes mellitus (DM1) and might become malnourished because of pain.

Chronic Pancreatitis

- The pancreas is shrunken and fibrotic. The main duct is dilated and filled with calcified secretions (small arrows).

Chronic Pancreatitis Symptoms

- Constant pain that radiates to the back (Early symptom).
- Poor absorption of food, leading to weight loss. This poor absorption occurs because the body is not secreting enough pancreatic enzymes to break down the food normally.
- Diabetes (elevated blood glucose) may develop if the insulin-producing cells of the pancreas become damaged.

Labs for Chronic Pancreatitis

- Glucose tolerance test (GTT) can show diminished pancreatic islet function
- Serum alkaline phosphatase, bilirubin, amylase, and lipase levels can be elevated
- Fecal fat content analysis can indicate steatorrhea
- Serum immunoglobulin G4 (IgG4) or gamma globulin levels might be elevated, indicating autoimmune CP

MNT for Chronic Pancreatitis

- Ensure a low-fat, high-protein diet with frequent, small meals
- Provide supplemental pancreatic enzymes (e.g., Pancrease, Creon) with meals
- Provide supplemental vitamins B12, A, D, E, K, folic acid, and calcium
- Enteral/parenteral nutrition might be needed to improve nutritional status
- Monitor glucose levels

Sample Menu

- Breakfast:
  - oatmeal (smooth consistency and stomach coating properties, supplying B vitamins and other vital nutrients)
  - Use fat free milk
- Lunch:
  - Tuna salad sandwich with whole grain bread
  - Green tea
- Dinner:
  - Vegetable soup (with egg whites or a lean meat)
- Snack:
  - low fat yogurt
- Make sure you Drink a lot of Fluids (water or tea)!!!!!

Case Study

- Elena Jordan
- Age 30
- Sex: female
- Education: Bachelor's degree
- Occupation: Pharmaceutical sales rep (works 50 + hours/ week)
- Household members: lives alone
- Ethnic background: Biracial
- Family History: No Family history of GI disease

Chief Complaint

- “I’m tired of hurting so much. I’ve had this terrible pain in my stomach for the past 2 days. I took a client out to dinner the other night, but I couldn’t eat much. This has been happening off and on for the past 9 months, but the pain has never gone around to my back before.”

Patients History

- For the past 12 months she has been experiencing epigastric pain
- Pain is now radiating to her back (from 4 hours to 3 days)
- Poor appetite and 10 lb weight loss
- 2 loose stools/ day for past 4 months, foul smelling

Patients History

- c/o nausea and anorexia
- Onset of disease was 12 months ago
- Treats herself with antacids
- Currently weighs 112lbs (weighed 140lbs a year ago)

Physical Exam

- Thin with temporal muscle wasting

Medications

- Demerol 25 mg IM q 4-6hrs (pain)
- Chlordiazepoxide 25 mg IV q 6 hours 3xd (anxiety and alcohol withdrawals)
- Supplemental Thiamin, Folic acid, multivitamin (depleted by alcohol consumption)

Assessment

- Height: 5’8
- Weight: 112 lbs.
- BMI: 17 (underweight)
- IBW: 140 lbs. (80% of her ideal body weight)
- UBW: 140lbs (80% of UBW)
  - lost 28 lbs in one year, 20% moderate weight loss

Usual Dietary History at Home

Breakfast	•Dry Bagel •1 cup of black coffee
Lunch	•A diet coke •Lean Cuisine (usually Swedish meatballs with noodles)
Dinner	•5 oz. of white wine while preparing dinner •Grilled Salmon (2-3 oz.) •Medium sized baked potato (with butter, sour cream, and chives) •2 stalks of steamed broccoli (with Cheez Whiz sauce) •2 glasses (10 oz.) of white wine

Usual diet on the Road

Breakfast	•¾ cup of cereal (varies) •1.5 cup of 2% milk •1 cup black coffee
Lunch (sometimes doesn't eat)	•Fruit and yogurt parfait (from McDonalds) •Medium diet coke
Dinner	•Usually an appetizer from a restaurant such as fried mushrooms, spinach salad with hot bacon dressing, fettuccine Alfredo, or a small (6 oz.) filet mignon with garlic mashed potatoes. •2-3 (6 oz.) glasses of wine
After dinner drink	Sherry (3 oz.)

Pertinent Labs

Labs	Normal	Patient's
Transferrin	250-380	155 L
Glucose	70-110	130 H
Bilirubin	≤0.3	1.5 H
ALT	4-36	45 H
AST	0-35	50 H
ALK phos	30-120	178
CPK	30-135	145
CHOL	120-199	225 H
LDL	<130	129
TG	35-135	250 H
HBA1C	3.9-5.2	6.5
WBC	4.8-11.8	14.5 H
HGB	12-15	11.6
HCT	37-47	35.7
MCV	80-96	101.5 H

Energy and Protein Needs

- EER:

  655+(9.6x50.9kg)+(1.8x172.7cm)-(4.7x30)= 1313.5kcals

- 1313.5x1.3= 1,707.5kcals
- Protein: 50.9kgx1.5= 76 grams Protein

Nutrition Diagnosis

- **Food and Nutrition-related knowledge deficit (NB-1.1)** related to consuming a lot of fatty foods and multiple drinks of alcohol/day as evidence by recent diagnosis of pancreatitis and high cholesterol
- **Involuntary weight loss (NC-3.2)** related to abdominal pain and epigastric pain as evidence by 28 lb weight loss in one year

Intervention

- Meal and Snack (ND-1)
  - General/healthful diet:
    - Switch to a low fat and complex carb meals, high protein snacks (ensure), and high fluid intake
- Nutrition-Related Behavior Modification Therapy (C-1)
  - Behavior modification:
    - Counseling on strategies to decrease fat when eating out (low fat dressings and spreads)
    - Healthy on the go snacks (ensure, fruits, vegetables, protein bars, ect)
    - Importance of decreasing alcohol consumption
    - Referral to community program for alcohol counseling

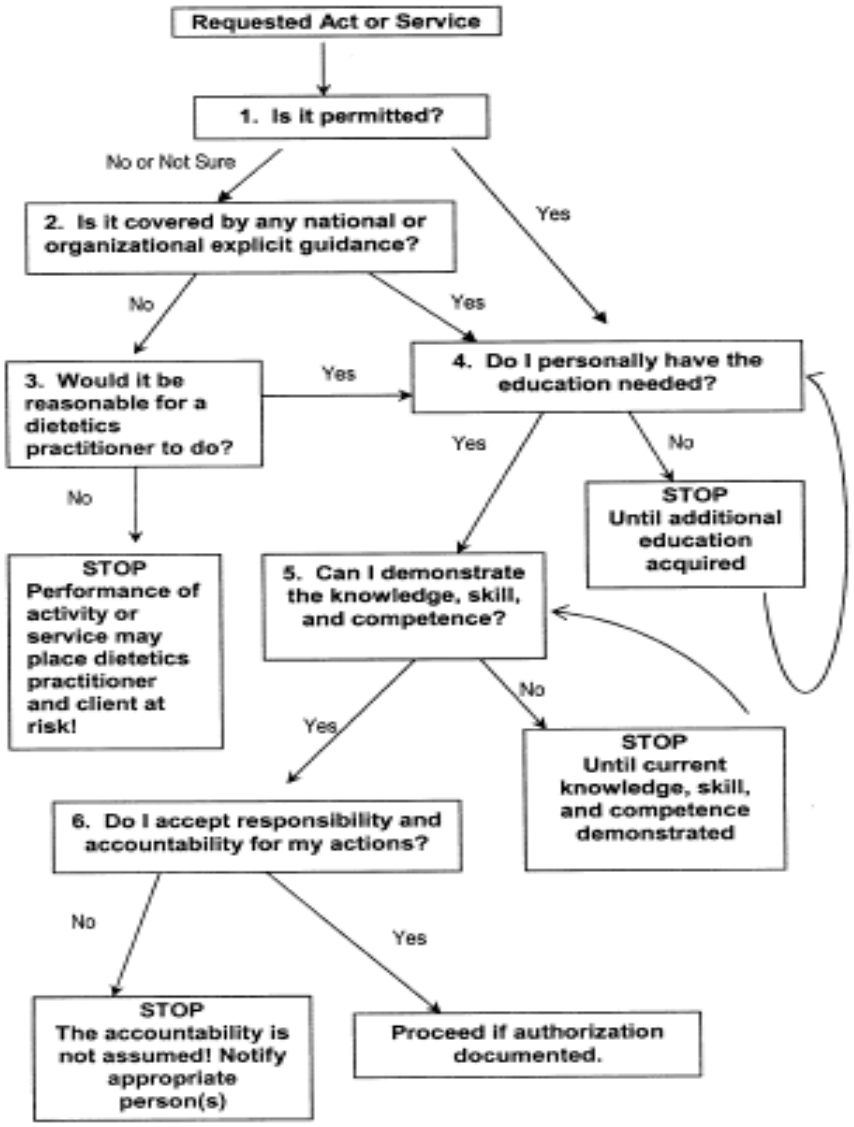
Goals

- Patient agrees to:
  - Meet with an alcohol counselor
  - Change to low fat salad dressing
  - Switch from cream based sauces and soups to broth based/ tomato based
  - Eat more by packing snacks on the go such as apples, carrots, and protein bars
  - Drink more fluids such as water and she said she will drink tea instead of diet sodas
  - Get CHOL < 200 and TRIG <150

Monitoring and Evaluation

- In 1 month:
  - Evaluate Patients diet
  - Monitor other lab values (GLU, ALT, AST, Bilirubin, CHOL, TRIG, ALK Phos)
  - Patients weight

Decision Tree



1. Yes, it is permitted
2. We personally have the education needed
3. We can demonstrate the knowledge, skills, and competencies
4. We accept the responsibility and are accountable for my actions
5. We can proceed

References

- Sutherland, D. , Radosevich, D. , Bellin, M. , Hering, B. , Beilman, G. , et al. (2012). Total pancreatectomy and islet autotransplantation for chronic pancreatitis. *Journal of the American College of Surgeons*, *214*(4), 409-424.
- Gasiorowska, A. , Talar-Wojnarowska, R. , Czupryniak, L. , Smolarz, B. , Romanowicz-Makowska, H. , et al. (2011). The prevalence of cationic trypsinogen (prss1) and serine protease inhibitor, kazal type 1 (spink1) gene mutations in polish patients with alcoholic and idiopathic chronic pancreatitis. *Digestive Diseases & Sciences*, *56*(3), 894-901.
- Stanga, Z. , Giger, U. , Marx, A. , & DeLegge, M. (2005). Effect of jejunal long-term feeding in chronic pancreatitis. *JPEN Journal of Parenteral & Enteral Nutrition*, *29*(1), 12-20.
- Koshita, S. , Ito, K. , Fujita, N. , Noda, Y. , Kobayashi, G. , et al. (2012). Localized autoimmune pancreatitis, 9 mm in size, without strictures of the main pancreatic duct. Gastrointestinal Endoscopy, 75(4), 920-922.
- Flint, Richard; Windsor, John; Bonham, Martin. ANZ Journal of Surgery, May2004, Vol. 74 Issue 5, p335-342
- Al-Omran, M. , AlBalawi, Z. , Tashkandi, M. , & Al-Ansary, L. (2010). Enteral Versus Parenteral Nutrition for Acute Pancreatitis. n.p.:
- http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0002129/
- Frossard JL, Steer ML, Pastor CM. Acute pancreatitis. Lancet. 2008;371:143-152.