Chronic Pancreatitis

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Overview

- Part I – Background
  - Disease and Physiologic Overview
  - Treatment and Management
- Part II – Case Study
  - Assessment
  - Diagnosis
  - Intervention
  - Monitoring/ Evaluation

Background

Normal Pancreatic Function

- Pancreas Anatomy
  - Large accessory digestive gland located behind the stomach
- Pancreatic Function
  - Exocrine Function
    - Produces enzymes necessary for digestion of proteins, fats, and carbohydrates.
    - Example: lipase, protease, amylase, phospholipase, esterase, etc.
  - Endocrine Function
    - Produces hormones to regulate the use of body fuels, mainly glucose.
    - Example: insulin, glucagon, ghrelin

Definition

- Chronic pancreatitis: damage to endocrine/exocrine cells of the pancreas due to repeated bouts of inflammation

Incidence and Etiology

- Incidence
  - Chronic pancreatitis occurs in 3.5 to 10 people per 100,000 in industrialized countries (Dugan, 2010).
- Etiology
  - The most common cause is alcoholism – 60 to 70%
  - Tropical pancreatitis
  - Hereditary pancreatitis
  - Up to 30% of cases are idiopathic (Giger, 2004)
Acinar cells of the pancreas
- Exocrine cells that synthesize enzymes
- Help metabolize alcohol
- Excess alcohol = acinar damage
  (Wilson, 2003)

Pathophysiology: Damage to Acinar Cells
- Protein plug/ductal obstruction
  - Increase in protein concentration in pancreatic secretions causes plugs in ducts, causing fibrosis
- Toxic-Metabolic
  - Direct toxic effect of alcohol on tissue in pancreas → chronic inflammation
- Oxidative Stress
  - Oxidative damage due to alcohol exposure → tissue damage → chronic pancreatitis
- Necrosis-Fibrosis
  - Repeated alcohol-induced acute pancreatitis → chronic pancreatitis
  (Gallo, 2005)

Early symptoms
- Epigastric pain, progressing to pain in back
- Anorexia
- Nausea
- Unintentional weight loss

Later symptoms
- Steatorrhea
- Diabetes mellitus
  - Loss of > 90% of normal pancreatic function

Medical Therapies
- Standard therapeutic measures include
  - Abstinence from alcohol
  - Pain control – medication
  - Pancreatic enzymes taken with meals

Moderate alcohol intake (RDA)
- Women: 1 drink per day
- Men: 2 drinks per day

How much is “one drink”?
- 1 drink = 14 g of pure alcohol
  - 12 oz beer
  - 8 oz malt liquor
  - 5 oz wine
  - 1.5 oz 80-proof liquor

Therapeutic measures: Blockages Only
- Endoscopic treatment
  - Decompress obstructed pancreatic duct
  - Remove obstruction and reduce pain
  - Does not improve pancreatic function
- Surgery
  - Pancreatic duct drainage
  - Pancreatic resection
  - Total pancreatectomy
  (Medscape*)
MNT for Chronic Pancreatitis

- ESPEN Guidelines:
  - More than 80% of patients can be treated adequately with normal food supplemented by pancreatic enzymes.
  - 10–15% of all patients require oral nutritional supplements.
- Enteral nutrition (EN) is indicated in approximately 5% of patients with chronic pancreatitis
- Parenteral nutrition (PN) is only indicated when EN is not possible (in less than 1% of patients) (Gianotti et al 2009).

- Compared to TPN, EN was associated with:
  - Significantly lower incidence of infection
  - Shorter hospital stays
  - Shorter stay in Intensive Care Unit
  - Fewer surgeries to control pancreatitis
  - Reduced inflammation/inflammatory markers
  - Decreased risk multiple organ failure

Our Patient

- Elena Jordan
- 30 year-old female
- Pharmaceutical sales rep
  - Works 50+ hours per week
- Lives alone

Part II

CASE STUDY

Assessment

- 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.”
Assessment

- **Height:** 5’8”
- **Weight:** 112 (weighed 140, one year ago)
  - Lost 20% of body weight in 1 year
- **80% IBW**
  - Mild weight loss
- **80% UBW**
  - Moderate weight loss
- **BMI 17**
  - Underweight

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Assessment

- **Pertinent Lab Values**
  - **Glucose - 130 (H)**
    - Decreased insulin production due to pancreatic damage
  - **Triglycerides - 250 (H)**
    - Low glucose uptake = increased TG utilization
  - **Amylase and lipase – not measured**
    - Assess damage to pancreas
    - Often do not see elevated amylase/lipase as with acute pancreatitis due to decreased production
  - **Fecal Fat Test—not measured**
    - Determine extent of malabsorption

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Assessment

- **WBC- 14.5 (H)**
  - Evidence of immune response to pancreatitis
- **Hgb-11.6 (L)**
- **HCT-35.7 (L)**
- **MCV-101.5 (H)**
  - Related to overall low intake (Fe, PRO, Folate/B₁₂)

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Assessment

- **Nutrition History**
  - Appetite has usually been good, but for the last 6-9 months has had difficulty eating due to nausea.
  - Often has to eat in restaurants due to traveling for work.
  - Consumes 2-3 alcoholic beverages per night.
  - Drank alcohol in high school and college.
  - Feels that she has to match clients drink for drink in order to help land business.
  - Usually drinks beer or wine when out with clients because she believes only people with alcohol problems drink “hard liquor.”

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Assessment

- **Usual Intake**
  - **At home:**
    - **Breakfast:** Dry bagel, 1c black coffee
    - **Lunch:** Diet Coke, Lean Cuisine – usually Swedish meatballs (with noodles)
    - **Dinner:** 5 oz white wine while preparing dinner; grilled salmon – usually 2-3 oz, seasoned with salt and pepper; baked potato – medium sized, with butter, sour cream, and chives; 2 stalks steamed broccoli with cheese sauce (made from Cheez Whiz); 2 glasses (5 oz) white wine with dinner

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Assessment

- **Usual Intake**
  - **On the road:**
    - **Breakfast:** ¾ c dry cereal (varies) with ½ c 2% milk, 1 c orange juice, 1 c black coffee
    - **Lunch:** (Often doesn’t eat lunch, but when she does)
      McDonald’s fruit and yogurt parfait, medium Diet Coke
    - **Dinner:** Usually some type of appetizer – most likely fried mushrooms; spinach salad with hot bacon dressing; fettuccine Alfredo or small (6 oz) filet mignon with garlic mashed potatoes; 2-3 glasses of wine (6 oz glasses)
    - **After-Dinner Drink:** Usually sherry (3 oz)
Assessment
- Estimated Energy Requirements
  - 40 kcal/kg/day x 50 kg = 2000 kcal/day
- Estimated Protein Requirements
  - 1.5 g/kg/day x 50 kg = 75 g protein/day
  (Dugan, et al, 2010)

Diagnosis
- Inadequate energy intake (NI-1.4) related to pain-induced anorexia as evidenced by a 20% loss of usual body weight over past year (moderate loss).
- Food and nutrition-related knowledge deficit (NB-1.1) related to no prior nutrition education as evidenced by new diagnosis of chronic pancreatitis.

Medical Intervention
- NPO
- Patient stable on IV fluids
- Pain medication
- Doctor requests consult for TPN
  - MD suggests:
    - 4.25% AA
    - 25% dextros
    - 85 mL/hr
    - 10% lipids
    - 500 mL/day

Medical Intervention
- Doctor Recommended TPN delivers:
  - 2632 total kcals
  - 87 g. PRO
  - 20% fat

Intervention
- Insert enteral (NJ) feeding tube (ND-2.1.2) and initiate feeding using standard (Nutren 1.0); go to peptide based (F.a.a,) if not tolerated. Start tube feed at 20 mL/hour, and advance as tolerated to reach goal rate of 85 mL/hour in 4-7 days. This will provide 2040 kcal/day and 82 g protein/day. (Meier and Mehanna)
  - Goals:
    - Maintain body weight and prevent further weight loss
    - Normalize CBC values, blood glucose, and triglycerides

Intervention
- Motivational interviewing (C-2.1) on lifestyle changes needed for management of newly diagnosed chronic pancreatitis: specifically, on dosage of replacement enzymes and effect of alcohol intake on condition.
  - Goals:
    - Patient demonstrates understanding of how to use replacement enzymes.
    - Patient demonstrates understanding of alcohol’s role in chronic pancreatitis.
Intervention

- Referral to community agencies/programs (RC-1.4): individual alcohol individual counseling and/or support group such as Alcoholics Anonymous.
- Goal:
  ◦ Patient agrees to consider attending one support group meeting.
- Referral to endocrinologist (RC-1.3) to assess patient need for insulin or oral hypoglycemic agents.
- Goal:
  ◦ Patient agrees to consult with endocrinologist.

Monitor and Evaluate

- Monitor weight
  ○ Outpatient: one month follow-up
- Monitor blood glucose
  ○ Inpatient: once per day
  ○ Outpatient: one month follow-up
- Monitor triglycerides
  ○ Outpatient: one month follow-up
- Monitor complete blood count
  ○ Outpatient: one month follow-up

Scope of Practice

- Evaluate understanding of enzyme replacement therapy
  ○ Have patient report details of enzyme regimen at one month follow-up
- Evaluate patient understanding of role of alcohol in disease and referral to support group
  ○ Ask if patient attended any support group meetings at one month follow-up
- Evaluate patient referral to endocrinologist
  ○ Ask if patient has had or scheduled appointment at one month follow-up

References