CASE STUDY #1

Pancreatic Cancer By: Briana Repp

Patient Profile

- Caucasian female
- 73 years old
- Not married, lives alone, retired health teacher
- Previous smoker (quit 39 years ago), consistent wine drinker (2 glasses/night)
- 5'6", 205 lbs
- Recent weight loss
- Fatigue, pruritus, jaundice

Current Admission

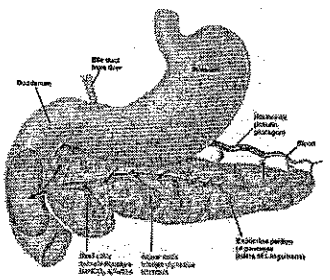
- High LFT's
- CT scan:
  - pancreatic head mass, inflammation and edema, prominence of pancreatic duct at 5 mm (normal 4.6 mm)
  - enlarged lymph nodes
  - lesions involving the liver & intrahepatic duct dilation including CBD (largest distention at 1.4 cm)
  - a large lobulated (septations measuring 9.8 cm), complex left adnexal cystic mass
  - Multiple gallstones, one in the neck, but none in CBD
- Liver biopsy showed adenocarcinoma of pancreas, metastatic to the liver
- ERCP:
  - large hiatal hernia and a giant duodenal ulcer with inflammation causing partial obstruction of the second portion of the duodenum

Diagnosis

- **Adenocarcinoma of pancreas, metastatic to liver with biliary obstruction**
- Acute painless jaundice with an obstructive pancreatic mass
- Cholelithiasis
- Ovarian mass
- Hiatal hernia
- Duodenal ulcer and inflammation
- Acute painless pancreatitis
- New onset hyperglycemia
- Hepatic cysts
- HTN, GERD
- Mild atelectasis
- Enlarged heart
- Normocytic, normochromic anemia

Pancreas

Within the pancreas, approximately 60% of people with pancreatic cancer develop it in the head of the pancreas (exocrine), the other 40% develop pancreatic cancer in the body, neck, or tail (endocrine).



Functions

- Exocrine
  - Secreting enzymes for digestion (i.e. lipase)
  - Acinar cells
- Endocrine
  - Secreting hormones that regulate body (i.e. insulin)
  - Islets of Langerhans (alpha, beta, and delta)
  - Cancer affecting this property is rare

Brenda Wal. Pancreatic cancer: Current practice, future directions. Radiation Therapist. 2010;19(2):122-142.

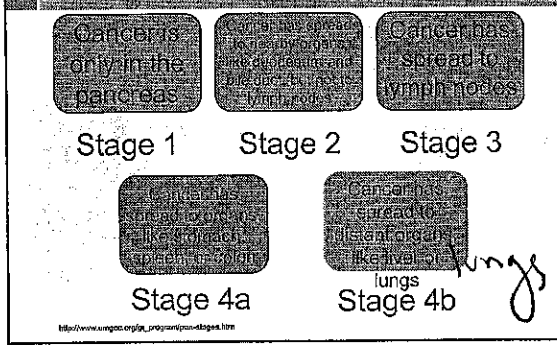
Prevalence

- Fourth leading cause of cancer-related mortality
- Fewer than 5% of patients survive beyond 5 years
- Ranks 13th worldwide for cancer incidence
- Ranks 8th worldwide in deaths from cancer

Symptoms

- Cancer in the head of the pancreas
  - Anorexia
  - Weight loss
  - Steatorrhea
  - Jaundice
  - Pruritus
- Cancer in the tail/body of the pancreas
  - Abdominal pain
  - Nausea
  - Back pain
  - Intermittent diarrhea

Stages of Pancreatic Cancer



Etiology

- Smoking
- Diabetes
- Age; risk increased after 45; mean age is 63
- Pancreatitis
- Obesity
- Low physical activity, low F/V
- High red meat (cured, BBQ, grilled)
- >30 g alcohol/day

Cigarette, cigar and pipe smoking, passive smoke exposure, and risk of pancreatic cancer: a population-based study in the San Francisco Bay Area

- Grade I, Good
- Analyzed relationship between cigarette smoking and pancreatic cancer
- Estimated the effects of smoking duration, pack-years smoked, cigarettes smoked/day, and cigarette smoking cessation on risk of developing pancreatic cancer
- Also analyzed relationship of second hand smoke exposure and developing pancreatic cancer

Methods

- Study Participants
  - Cases: 532, ages 21-85
  - Controls: 1,701, ages 21-85
- Interview
  - Job hx
  - Tobacco/alcohol use
  - Med hx (DM, pancreatitis, gallbladder disease)
  - Family med hx
  - Anthropometrics
  - Diet assessment (average consumption of certain foods, vitamin/supplement use)

Methods

- Smokers were defined as: >100 cigs in lifetime
- Former smokers: had stopped 1 yr or more prior to dx or interview
- Current smokers: those who had quit less than 1 yr prior to dx or interview
- Cigar/pipe smokers: if they had ever smoked pipes and/or cigars for >6 months
- Consumers of alcohol: ever had at least 1 alcoholic drink/month

Results

- Smoking Status & Quantity
  - Risk increased w/ increasing intensity of smoking
  - Smoking at least one cigar/pipe/month for >6 months was not associated with pancreatic cancer
- Smoking Cessation
  - Risk increased as cessation from smoking prior to dx got lower (<10 had more risk, and current had most risk)
  - No risk if quit >=10 years ago, relative to current smokers
- Passive Exposure to Smoking
  - Childhood & Adult Exposure, & Workplace Exposure were not associated with an increased risk

Discussion

- Consistent with previous studies: 1.6-1.9-fold risk with current smokers
- 2-fold risk with those who smoked…
  - 40 or more pack years
  - More than 40 years
  - More than 40 cigarettes/day
- Found similar risks for men & women

Conclusions

- **Bottom line: Smoking increases your risk of pancreatic cancer.**

Physical Activity, Diet, and Pancreatic Cancer: A Population-Based, Case-Control Study in Minnesota

- Grade I, Good
- Analyzed relationship between physical activity & diet, & pancreatic cancer
- Wondering if there is an association of pancreatic cancer with the "Western diet" (high in energy and fat and low in fiber and physical activity)
- Study Population
  - Cases were newly dx with exocrine pancreatic cancer
  - 186 cases, 554 controls

Zhang J, Dhakal IB, Gross DM, Lang PN, Kadlubar FF, Harnack JL, Anderson EK. Physical activity, diet, and pancreatic cancer: A population-based, case-control study in Minnesota. Nutrition and Cancer. 61(4):457-465.

Data Collection

- Interview
  - In-person
  - Basic questionnaire (including cigarette smoking) and a FFQ (modified version of the Willet FFQ) that covered alcohol use
  - Physical activity: light (e.g. sitting, strolling), moderate (e.g. carpentry, brisk walking, mopping floors), and heavy (e.g. lumberjack, running, heavy shoveling, basketball)
  - Reported # of hrs/wk they spent on each during the year before pancreatic cancer and the past year for controls

Results

- Cases had...
  - Lower education attainment
  - More likely to be former or current smokers
  - Less physically active
  - Hx of DM
  - Higher intake of fat, lower intake of fiber
- Protective effect associated with light/moderate, not heavy
- Nonconsistent results for type of fat consumed and pancreatic cancer risk, but high fat is associated with increased risk
- Excess energy intake increases risk
- Fiber resulted in half the risk
- **Bottom line: Prevention of pancreatic cancer may be linked to a high fiber diet, an active lifestyle, and a low-fat diet with appropriate calories.**

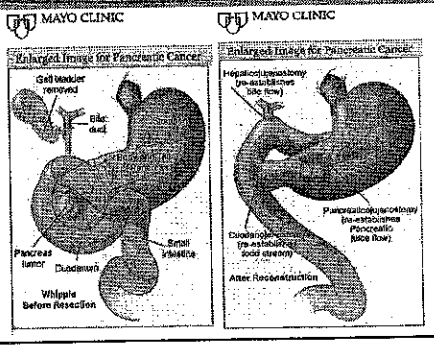
Treatment

- Whipple procedure
  - Removal of pancreas head, duodenum, 15 cm of jejunum, gallbladder, common bile duct, and part of the stomach
  - Mortality rates are about 4%
  - Only 15-20% have resectable cancer
- Chemotherapy—gemcitabine
  - Neoadjuvant: before surgery
  - Adjuvant: after surgery or when surgery is not an option
- Radiation
  - Intensity-modulated radiation therapy (IMRT)
  - Intraoperative radiation therapy (IORT)
  - Proton therapy
- Palliative care

Brooks WM. Pancreatic cancer: Current practice, future directions. Radiation Therapist. 2010;18(2):122-142.

describe

Whipple Procedure



Contraindications for Resection

ABSOLUTE

- Metastases to the liver, peritoneum, omentum, or any extra-abdominal site
- Encasement of celiac axis, hepatic artery, superior mesenteric artery.
- Involvement of spleno-portal confluence
- Involvement of bowel mesentery.
- Involvement of superior mesenteric vein or portal vein

RELATIVE

Brooks WM. Pancreatic cancer: Current practice, future directions. Radiation Therapist. 2010;18(2):122-142.

Nutrition Intervention

- Managing chemotherapy (taste change, diarrhea, constipation)
- Weight stabilization
- Managing malabsorption (PERT, lactose intolerance)
- Diabetes education
- Neutropenic diet (if on chemotherapy)
- Lower fat
- Nutritional supplement
- TPN/EN

Prognosis

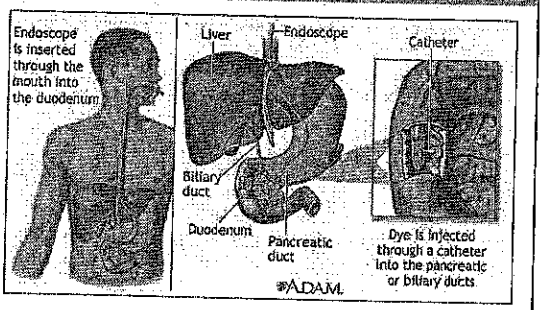
- "Pancreatic cancer is aggressive and has a notoriously poor survival rate."
- "Only 10-15% of pancreatic cancer cases are caught early."
- Those with metastatic cancer are only given 8-12 months to live
- Even with treatment, "more than 90% of patients die within a year of diagnosis."

Brooks WM. Pancreatic cancer: Current practice, future directions. Radiation Therapist. 2010;18(2):122-142.

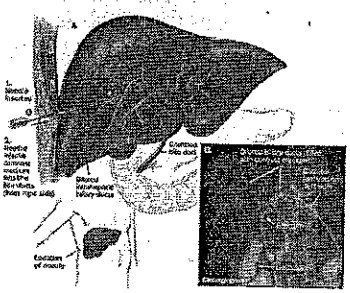
Diagnostic Procedures

- Endoscopic retrograde cholangiopancreatography procedure (ERCP)
- Percutaneous transhepatic cholangiography (PTC)
- CT scan of abdomen and pelvis
- Liver biopsy

ERCP



PTC



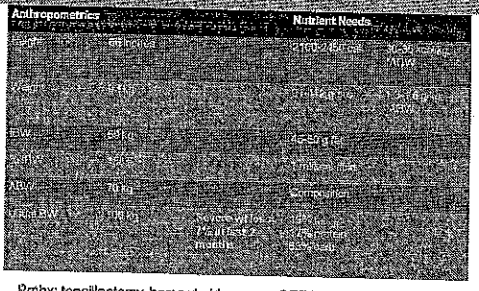
Treatments for this patient

- Chemotherapy—gemcitabine
- Placed 10 French internal/external biliary drainage catheter; placed to gravity bag for drainage of liver
- Stent placement for biliary stenosis
- Port-a-cath

Medications

Meds	Used for	Nutritional Significance
Carvedilol	CHF/HTN	Diarrhea
Cyproheptadine	Appetite stimulant, antihistamine, antipruritic	Dry mouth/throat
Hydralazine	HTN, vasodilator, CHF	Anorexia, edema, N/V, diarrhea
Insulin (humalog, lantus)	Hyperglycemia	Low blood glucose
Iron sucrose	Anemia	
Lactulose	High ammonia levels, laxative	Diarrhea
Omeprazole/Lansoprazole	Antiulcer, PPI	Diarrhea

Nutrition Care Process: Assessement



Pmhx: tonsillectomy, hemorrhoid surgery, GERD, obesity, anemia, arthritis, HTN

Lab Values Green is HIGH, Red is LOW

Labs	8/31	9/1	9/2	9/3	9/4	9/5	9/6	9/7	Normal
RBC	3.01	2.79	2.91	2.74	2.89	2.79	[illegible]	3.64	4-5.2 m/uL
Hgb	8.4	7.7	8	7.7	8.1	8.0	7.6	10.1	11.6-16.5 g/dl
Hct	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	26.3	[illegible]	31.5	34.5-46.6%
CEA		93.5							<5 ng/mL
Lipase	1361	[illegible]	[illegible]		730	[illegible]	[illegible]		22-51 IU/L
CA 125			47.6						<33.0 u/mL
CA 19-9		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Amylase	352								28-100 u/L
CRP	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		0-.7 mg/dl
BUN	19	16	10		7	7	8		10-26 mg/dl
Creatinine	1.12	1.03	.82		.65	[illegible]	.74		.5-1.24 mg/dl
Sodium	128	131	135		139	136	140		136-149 mEq/L
Potassium	4.3	[illegible]	[illegible]	3.4	3.3	[illegible]	[illegible]		3.5-5 mEq/L
Chloride	98	101	104		108	104	105		98-110 mEq/L

Lab Values

- CEA (carcinoembryonic antigen)
  - Tumor patients, inflammation, liver diseases, chronic smokers
  - For prognosis & effectiveness of tx
  - Normally in blood, but can be in others fluids = metastasis
- CA-125 tumor marker
  - Very accurate marker for ovarian cancer
  - For prognosis & effectiveness of tx
  - May be elevated in benign diseases (i.e. pancreatitis, cirrhosis), smokers, other types of cancer
- CA 19-9 tumor maker
  - For dx & effectiveness of tx
  - Elevated in pancreatic or hepatobiliary cancer

Pagana KD, Pagana TJ. Mosby's Diagnostic and Laboratory Test Reference. 8th ed. St. Louis, MO: Mosby Elsevier; 2007.

include only pertinent lab values

Lab Values

- Amylase
  - Dx & monitor pancreatitis, not specific
  - Elevated d/t damage to acinar cells or blockage of pancreatic duct
- Lipase
  - Acute pancreatitis

Pagana KD, Pagana TJ. Mosby's Diagnostic and Laboratory Test Reference. 8th ed. St. Louis, MO: Mosby Elsevier; 2007.

Lab Values

Labs	8/31	9/1	9/2	9/3	9/4	9/5	9/6	9/7	Normal
AST	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	98	[illegible]	0-40 IU/L
ALT	263	219	[illegible]		168	146	[illegible]		0-40 IU/L
ALP	[illegible]	851	845	[illegible]	[illegible]	766	698	[illegible]	30-100 IU/L
Bilirubin, total	4.4	4.1	4.4		5.0	4.9	[illegible]		.2-1.5 mg/dl
GFR	48	62	68	[illegible]	65	76	77	[illegible]	[illegible]
Glucose	428	330	384	290	338	241	147	187	70-125 mg/dl
Magnesium	[illegible]	2	2	2.2	2.1	2.2	2.0	2.2	[illegible] mg/dl
Phosphorus		3.3						3.6	2.5-4.3 mg/dl
Potassium	[illegible]	3.7	3.8	[illegible]	[illegible]	3.6	3.5	[illegible]	[illegible]
Activated PTT	[illegible]		48.2	78.5	50	44.5	49.7		24-36 seconds
Protein, total	[illegible]	5.6	6.1	[illegible]	[illegible]	6.6	6.0	[illegible]	[illegible]
Albumin	2.9	2.9	2.6		2.8	2.6	2.7		3.2-5.5 gm/dl
Carbon Dioxide	19	23	24	[illegible]	23	24	25	[illegible]	24-31 mEq/L

Lab Values

- AST (aspartate aminotransferase)
- ALT (alanine aminotransferase)
- ALP (alkaline phosphatase)
  - Most accurate for determining tumor metastasis to the liver
- Bilirubin, total
  - Sum of direct (extrahepatic obstruction) and indirect (hepatocellular dysfunction, like hepatitis)

Pagana KD, Pagana TJ. Mosby's Diagnostic and Laboratory Test Reference, 8th ed. St. Louis, MO: Mosby Elsevier; 2007.

NCP: Diagnosis

- PES: Increased nutrient needs related to pancreatic cancer as evidenced by the start of chemotherapy and a weight loss of 15 lbs in the last 2 months
- Classified pt as Level 3, severe compromise (follow up in 5 days)

NCP: Interventions

- 1. Educate the pt on nutritional management of chemotherapy
  - Provided pt with education materials on low/high fiber, neutropenic precautions, pancreatitis diet (low fat), and high calorie/high protein to avoid weight loss.
- 2. Provided with Ensure Ut ?
- 3. Honor pt food prefs
- 4. Refer this pt to the diabetes educator d/t new T2DM onset

NCP: Monitoring

- 1. >75% est. energy needs will be met
- 2. >75% PO intake

NCP: Evaluation

- 1. Pt had no questions on education materials
- 2. Left handouts with pt
- 3. Pt will be able to implement chemotherapy nutrition management successfully and maintain LBM.

References

- Abbruzzese LJ, Lowy MA, Pleskow D, Xiong QH. Cancer of the pancreas. Patient Care for the Nurse Practitioner. 2006; 9-16.
- Banim JP, Hart RA. Nutrition and diet in the aetiology and management of pancreatic cancer. Gastrointestinal Nursing. 2010;8(8): 24-29.
- Broudo WM. Pancreatic cancer: Current practice, future directions. Radiation Therapist. 2010;19(2):122-142.
- Hasse MJ, Matarese EL. Medical Nutrition Therapy for Liver, Biliary System, and Exocrine Pancreas Disorders. In: Mahan LK, Escott-Stump S, ed. Krause's Food & Nutrition Therapy. 12th ed. St. Louis, MO: Saunders Elsevier; 2008:731-732.
- Pagana KD, Pagana TJ. Mosby's Diagnostic and Laboratory Test Reference. 8th ed. St. Louis, MO: Mosby Elsevier; 2007.
- Pancreatic Cancer. In: Escott-Stump, S. Nutrition and Diagnosis-Related Care. 6th ed. Philadelphia: Lippincott William & Wilkins; 2008: 719-724.
- Sut M, Kennedy R, McNamee J, Collins A, Clements B. Long-term results of percutaneous transhepatic cholangiographic drainage for palliation of malignant biliary obstruction. J of Palliative Medicine. 2010;13: 1311-1313.
- Tanah, JG, Holly AE, Wang F, Bracci MP. Cigarette, cigar and pipe smoking, passive smoke exposure, and risk of pancreatic cancer: a population-based study in the San Francisco Bay Area. BioMed Central Cancer. 2011;11(138):1-8.
- Zhang J, Dhakal BI, Gross DM, Lang PN, Kadlubar FF, Hamack JL, Anderson EK. Physical activity, diet, and pancreatic cancer: A population-based, case-control study in Minnesota. Nutrition and Cancer. 61(4):457-465.

Any Questions?