CLINICAL VIGNETTE

Pancreas Cancer in a Pancreatic Cyst Detected at Wellness Exam

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Case Presentation

A 51-year-old female presented for a routine health maintenance exam. She reported a sensation of fullness in her left upper abdomen for about two months. It was intermittent, but increased when lying down or when eating a large meal. She had no appetite or bowel changes. She reported three prior episodes of emesis after eating quickly, but no other nausea or vomiting. She had no alcohol or tobacco use or history of pancreatitis or other abdominal pain in the past. Family history was remarkable for a sister with lupus, mother with cervical cancer and paternal grandmother with pancreatic cancer. Physical exam was unremarkable except for mild tenderness in her left upper abdomen, without guarding or palpable masses. Labs were unremarkable except for HgA1C of 6.1. Liver enzymes were normal. Abdominal ultrasound showed a large, round, complex cystic mass within the body/tail of the pancreas measuring 7.9 x 7.1 x 7.1 cm with internal vascularity with a few thin, internal septations. CT ABD/pelvis confirmed a large, fairly well-circumscribed 9.0 x 7.2 x 7.5 cm encapsulated solid/cystic mass involving the body and tail of the pancreas. The distal pancreatic duct was dilated and several low density lesions were seen in the liver. Additional labs included elevated Amylase 166 (31-124 U/L) and Lipase 474 (9-63 U/L).

Endoscopic ultrasound with cyst aspiration showed rare, atypical cells. Fine Needle aspiration/core biopsy of solid mass showed mucinous cystic neoplasm (MCN) with at least high grade dysplasia. CEA in cystic fluid was 51,100 ng/mL with cutoff for mucinous cyst 192ng/mL).[1] FNA of liver was negative for carcinoma. The patient underwent robotic assisted distal pancreatectomy and splenectomy. Pathology revealed an intact distal pancreatectomy specimen that had solid and cystic components with hemorrhagic cyst contents. Gross pathology was consistent with mucinous cystic neoplasm (MCN) with a 0.3 cm focus of invasive adenocarcinoma. Staging was pT1aN0 (AJCC Stage 1a) with 0/17 lymph nodes involved. CA 19-9 was < 3 before and after surgery.

She had an uneventful post-operative course with return of bowel function on POD3. She was discharged on POD5 on enoxaparin and home drain care. At two week follow-up, she was eating eggs, rice, and vegetables with 3-5 bowel movements/day with good pain control on ibuprofen. At six month follow up she was feeling well. She was offered systemic chemotherapy at the time of diagnosis but declined and has annual MR surveillance for recurrence.

Discussion

Many patients with pancreatic cysts are asymptomatic, detected incidentally on imaging performed for unrelated reasons. When symptoms are present, they are often nonspecific.[2,3] The major challenge in the evaluation of pancreatic cystic neoplasms (PCNs) is identifying lesions with malignant potential or signs of malignancy while not subjecting patients to unnecessary testing.[2,4,5] Most PCNs are found incidentally. The World Health Organization classifies PCNs into four groups, based on histology, which have varying malignant potential: 1). Serous Cystic Tumors; 2). Mucinous Cystic Neoplasms; 3). Intraductal Papillary Mucinous Neoplasms; and 4). Solid Pseudopapillary Neoplasms. Pancreatic protocol CT or MRI/magnetic resonance cholangiopancreatography (MRCP) are helpful to identify cyst type, size, and features associated with malignancy.

Incidentally detected pancreatic cysts have low risk of malignancy.[1,3,6] Three factors were associated with increased malignancy risk. 1). Size, with 43% malignancy in cysts >3 cm, compared with 22% risk for cysts <3 cm, odds rato 3.0). 2). Presence of a solid component within the cyst (73 versus 23 percent if there was no solid component, OR 7.7). 3). Dilated pancreatic duct with 47% malignancy versus 33% if the duct was not dilated, OR 2.4, 95% CI 0.7-8.0). Cyst enlargement over time was not associated with increased risk of malignancy.[7]

Management of pancreatic cystic neoplasms has been reviewed by three organizations. In 2012 by the International Association of Pancreatology, in 2015 by the American Gastroenterological Association, and in 2015 by the American College of Gastroenterology.[2,4,5]

In general, surgery is indicated for cysts with malignant cytology, cysts that are causing complications, cysts with features concerning for malignancy and cysts with significant malignant potential, including MCNs, main-duct IPMNs and SPNs. The decision to operate should take into account factors such as the patient's age, general health, suspicion for malignancy, or malignant risk to the patient.[1-4]

The majority of exocrine pancreatic cancers (85%) are adenocarcinomas arising from the ductal epithelium. Surgical resection is the only potentially curative treatment. Because of the late presentation of the disease, only 15-20% of patients are candidates for pancreatectomy. The prognosis of pancreatic cancer is poor even in those with potentially resectable disease.

Despite progress in surgical techniques and adjuvant therapy, the evidence that outcomes are improving over time is equivocal.[1,6] Favorable prognosis is associated with early resection, negative nodes if more than 15 were sampled, and adjuvant chemotherapy. There are limited 5-15 year survivors. The National Cancer Institute database has shown improving prognosis with survival beyond five years.[7]

Antimicrobial prophylaxis is recommended in patients undergoing complete or partial pancreatectomy,[8] as well as thromboprophylaxis. Those undergoing splenectomy should be vaccinated against encapsulated organisms: streptococcus pneumoniae, Neisseria meningitides, and Hemophilus influenza.[9]

REFERENCES

1. **Scheiman JM, Hwang JH, Moayyedi P**. American gastroenterological association technical review on the diagnosis and management of asymptomatic neoplastic pancreatic cysts. *Gastroenterology*. 2015 Apr;148(4):824-48.e22. doi: 10.1053/j.gastro.2015.01.014. Review. PubMed PMID: 25805376.
2. **Vege SS, Ziring B, Jain R, Moayyedi P; Clinical Guidelines Committee; American Gastroenterology Association**. American gastroenterological association institute guideline on the diagnosis and management of asymptomatic neoplastic pancreatic cysts. *Gastroenterology*. 2015 Apr;148(4):819-22; quize12-3. doi: 10.1053/j.gastro.2015.01.015. PubMed PMID: 25805375.
3. **Sharma A**. Tumors of the Pancreas. In: Greenberger NJ, Blumberg RS, Burakoff R (eds), *Current Diagnosis & Treatment: Gastroenterology, Hepatology & Endoscopy*. New York: McGraw-Hill; 2009. p. 3-18.
4. **Khalid A, Brugge W**. ACG practice guidelines for the diagnosis and management of neoplastic pancreatic cysts. *Am J Gastroenterol*. 2007 Oct;102(10):2339-49. Epub 2007 Aug 31. Review. PubMed PMID: 17764489.
5. **ASGE Standards of Practice Committee, Muthusamy VR, Chandrasekhara V, Acosta RD, Bruining DH, Chathadi KV, Eloubeidi MA, Faulx AL, Fonkalsrud L, Gurudu SR, Khashab MA, Kothari S, Lightdale JR, Pasha SF, Saltzman JR, Shaukat A, Wang A, Yang J, Cash BD, DeWitt JM**. The role of endoscopy in the diagnosis and treatment of cystic pancreatic neoplasms. *Gastrointest Endosc*. 2016 Jul;84(1):1-9. doi: 10.1016/j.gie.2016.04.014. Epub 2016 May 17. PubMed PMID: 27206409.
6. **Spinelli KS, Fromwiller TE, Daniel RA, Kiely JM, Nakeeb A, Komorowski RA, Wilson SD, Pitt HA**. Cystic pancreatic neoplasms: observe or operate. *Ann Surg*. 2004 May;239(5):651-7; discussion 657-9. PubMed PMID: 15082969; PubMed Central PMCID: PMC1356273.
7. **Valsangkar NP, Morales-Oyarvide V, Thayer SP, Ferrone CR, Wargo JA, Warshaw AL, Fernández-del Castillo C**. 851 resected cystic tumors of the pancreas: a 33-year experience at the Massachusetts General Hospital. *Surgery*. 2012 Sep;152(3 Suppl 1):S4-12. doi: 10.1016/j.surg.2012.05.033. Epub 2012 Jul 6. PubMed PMID: 22770958; PubMed Central PMCID: PMC3806101.
8. **Donald GW, Sunjaya D, Lu X, Chen F, Clerkin B, Eibl G, Li G, Tomlinson JS, Donahue TR, Reber HA, Hines OJ**. Perioperative antibiotics for surgical site infection in pancreaticoduodenectomy: does the SCIP-approved regimen provide adequate coverage? *Surgery*. 2013 Aug;154(2):190-6. doi: 10.1016/j.surg.2013.04.001. Epub 2013 May 10. PubMed PMID: 23664266; PubMed Central PMCID: PMC4601575.
9. **Guinan EC, Molrine DC, Antin JH, Lee MC, Weinstein HJ, Sallan SE, Parsons SK, Wheeler C, Gross W, McGarigle C, et al**. Polysaccharide conjugate vaccine responses in bone marrow transplant patients. *Transplantation*. 1994 Mar 15;57(5):677-84. PubMed PMID: 8140632.