Pancreatic Adenocarcinoma Presenting as Acute Pancreatitis During Pregnancy: Clinical and Radiologic Manifestations

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Only seven cases of pancreatic adenocarcinoma diagnosed during pregnancy have been reported. In this article, we describe a case of pancreatic adenocarcinoma presenting clinically as acute pancreatitis in a pregnant patient. Magnetic resonance imaging (MRI) and magnetic resonance cholangiopancreatography (MRCP) revealed a pancreatic mass with an inflammatory component and multiple hyperintense metastatic lesions in the liver. The patient was initially treated for biliary pancreatitis, and pancreatic cancer was not suspected given her young age and absence of risk factors. A diagnosis of pancreatic cancer in a pregnant patient requires a high index of suspicion, and pancreatitis can be a mode of presentation.

CASE PRESENTATION

A 25-year-old gravida two, parity one Caucasian woman at 20 weeks gestation with no significant past medical history presented with a five day history of epigastric pain, nausea, and an episode of emesis. The patient denied a history of alcohol consumption or illicit drug use. She was only on prenatal vitamins during this time. She was afebrile with normal vital signs. Physical examination revealed a gravid uterus and a mildly tender abdomen with hypoactive bowel sounds. No scleral icterus was noted. Laboratory studies were significant for a white blood cell count 12.8 g/L (12-16), hematocrit 38% (36-47), total bilirubin 0.8 mg/dL (0.3-1.2), aspartate aminotransferase (AST) 25 U/L (0-35), alanine aminotransferase (ALT) 99 U/L (0-35), alkaline phosphatase 112 U/L (36-92), amylase 144 U/L (0-130), and lipase 2315 U/L (0-95). Testing for acute viral hepatitis, acute cytomegalovirus, herpes, and toxoplasmosis were all negative. Right upper quadrant ultrasound revealed a normal gallbladder without stones and no common bile duct dilatation. The patient was admitted to the hospital for acute pancreatitis, and was initially managed with a nothing-by-mouth status, intravenous hydration, and medication for abdominal pain.

Over the next few days she had modest clinical improvement, and her amylase and lipase were trending down. However, she remained symptomatic with episodic worsening of her abdominal pain and associated nausea and emesis. Abdominal magnetic resonance imaging (MRI) and magnetic resonance cholangiopancreatography (MRCP) (Figures 1 and 2) were performed and revealed a peripancreatic mass that was attributed to inflammatory changes from acute pancreatitis. The biliary system and common bile duct were normal. Multiple small hyperintensities were noted in the liver, interpreted as cysts or hemangiomas. Five days later endoscopic ultrasound (EUS) revealed sludge in the gallbladder and apparent inflammatory mass changes in the head of the pancreas, which were believed to be consistent with pancreatitis.

On the 17th hospital day the patient’s laboratory studies were significant for a white blood cell count 17.3, total bilirubin 1.9, AST 38, ALT 111, and alkaline phosphatase 165. Amylase and lipase were normal. The patient was started on intravenous antibiotics empirically. Five days later, a repeat MRI and MRCP were performed and revealed increasing biliary sludge with common bile duct dilatation and multiple small hyperintensities scattered throughout the liver, interpreted as cysts or hemangiomas.
Since the patient only made minimal clinical progress and was found to have a dilated common bile duct on MRCP, she underwent endoscopic retrograde cholangiopancreatography (ERCP) on the 27th hospital day. The findings revealed a short stricture of the distal common bile duct, which was not interpreted as being malignant in nature. Biliary sphincterotomy and placement of a common bile duct stent were performed to relieve obstruction from the stricture. The procedure was successful, and a large amount of biliary sludge with what appeared to be tiny crystals was noted. However, subsequent to the ERCP she continued to have right upper quadrant pain. Her acute pancreatitis appeared to have resolved, however, the general surgery team was concerned that she may have cholecystitis which could recur in the third trimester. She subsequently underwent a cholecystectomy. On the second post-operative day her AST (which had been ranging from 20-100) and ALT (ranging from 56-130) had decreased to 33 and 65, respectively; amylase and lipase remained normal. After her surgical pain resolved and she could tolerate oral intake, discharge planning was initiated. Repeat laboratory studies before discharge were significant for an AST 277 and ALT 523. When the patient was feeling well, she was discharged home with follow-up a week later at the gastroenterology clinic. At her follow-up visit, she was found to have elevated liver enzymes (AST 263, ALT 465), total bilirubin 2.5, and alkaline phosphatase 239, which were thought to be caused by stent malfunction. She was scheduled for a return visit for possible repeat ERCP and stent exchange.

A few days later the patient presented to an outside hospital with persistent abdominal pain. She underwent a repeat panel of complete biochemical studies and MR imaging of the abdomen. The studies were suggestive of metastatic pancreatic adenocarcinoma which was later confirmed by liver biopsy. It was decided to administer corticosteroids to the mother to enhance fetal lung maturity and to proceed with delivery at 30 weeks via cesarean section in order to facilitate treatment after delivery. She delivered a viable neonate. Unfortunately, two weeks later the patient succumbed to her pancreatic cancer.

**DISCUSSION**

Pancreatic cancer is extremely rare in a pregnant patient. In our case, pancreatic cancer presented clinically as acute pancreatitis. The patient complained of epigastric abdominal pain and was found to have elevated amylase and lipase levels. Though computerized tomography (CT) is the primary method for diagnosing pancreatic cancer, pregnancy is a relative contraindication secondary to...
radiation exposure to the fetus. Liver lesions and pancreatic mass identified on MR/MRCP were not suspected to be a malignant process given the young age of the patient and absence of risk factors.

Only seven cases of pancreatic adenocarcinoma diagnosed antepartum have been described in the literature.³–⁸ Pancreatic cancer manifested as acute pancreatitis in two of the cases.³,⁸ Marinoni et al reported a 38-year-old woman diagnosed at 27 weeks gestation with obstructive jaundice and secondary pancreatitis. Abdominal ultrasound revealed enlargement of the head of the pancreas and a mass in the pancreatic uncinate process compressing the pancreatic duct and biliary tract. MR confirmed the presence of the mass and revealed liver and lung metastases.⁶ Kakoza et al described a 40-year-old woman diagnosed at 24 weeks gestation with cholecystitis and gallstone pancreatitis. ERCP was limited by a large duodenal ulcer, and duodenal mucosal biopsy revealed invasive adenocarcinoma. CT angiogram revealed a mass in the groove between the head of the pancreas and the duodenum.⁸

Pancreatic cancer ranks fourth in cancer-related deaths in North America. The prognosis is often poor because approximately 50% of patients with pancreatic cancer present with distant metastases to the liver or other visceral organs. The median survival for patients with advanced-stage disease is six months. Another 35% of patients have localized disease that is considered unresectable due to vascular invasion. The remaining 15% of patients who are candidates for resection commonly develop local or distant relapse within two years of surgery.⁹ Risk factors for pancreatic cancer include cigarette smoking (accounts for 1 out of 4 cases), advanced age, male gender, African-American ethnicity, family history, genetic syndromes, diabetes mellitus, and chronic pancreatitis.¹⁰

The clinical presentation of pancreatic adenocarcinoma is related to the location of the cancer within the pancreas. Tumors in the head, neck or uncinate process typically present with nonspecific abdominal or back pain, followed by obstructive jaundice. Pancreatitis is a rare complication. Tumors in the body or tail are less common and may remain...
asymptomatic for long periods of time. Signs of advanced disease include poor appetite, weight loss, gastric outlet obstruction, and ascites.9

Frequencies of presenting signs and symptoms were reported in the Norwegian Pancreatic Cancer Trial, a prospective study of 472 patients with adenocarcinoma of the pancreas and ampulla of Vater. Abdominal pain, weight loss, and jaundice were the most common symptoms, occurring in 72%, 58%, and 47% of patients, respectively. Abdominal pain and weight loss predicted advanced stage disease. Painless jaundice, often described as the classic presentation of pancreatic cancer, occurred in a minority (18%) of patients. Nonspecific symptoms were present in half of the patients, including dyspepsia (12%), diarrhea/steatorrhea (12%), and nausea (5%). Acute pancreatitis was present in 4% and 19% of patients with pancreatic and ampulla of Vater tumors, respectively.11

Pancreatitis may be a complication of pancreatic cancer as a result of infiltration of the pancreas by the tumor and/or obstruction of enzyme flow from the pancreatic duct. Bracci et al analyzed data from two large case-control studies of pancreatic cancer and found that a history of pancreatitis was associated with a 7.2-fold increased risk estimate for pancreatic cancer. Furthermore, the results revealed a strong association between pancreatic cancer and pancreatitis diagnosed within three years of the pancreatic cancer.12 A close temporal relationship between pancreatitis and pancreatic cancer could also represent the misdiagnosis of pancreatic cancer as pancreatitis.

Acute pancreatitis is a rare occurrence in pregnancy, complicating approximately three in 10,000 pregnancies. Etiologies of acute pancreatitis in pregnancy are similar to those in the general population, with the most common being gallstones, which are responsible for 70% of cases.13 Biliary sludge and gallstones are common during pregnancy and most disappear after delivery. In a prospective cohort study of 272 pregnant women by Maringhini et al, the incidence of biliary sludge and gallstones was about 31% and 2%, respectively. Furthermore, about 61% of sludge and 28% of stones disappeared during the mean follow-up five months postpartum.14 Cholecystectomy is frequently performed within the first year postpartum for those who have persistent biliary sludge or stones to prevent recurrence of acute pancreatitis.

Management of the pregnant patient with pancreatic cancer depends on the gestational age at diagnosis and the stage of the disease. Surgical resection followed by adjuvant therapy is the standard of care for early-stage disease. In the pregnant patient, prevention of disease progression in the mother must be weighed against maturation of the fetus. Surgical intervention in the first trimester carries a risk of spontaneous abortion, and in the third trimester the large size of the uterus is prohibitive; therefore, the second trimester is considered the ideal time for tumor resection.8

Since pancreatic cancer in pregnancy is extremely rare, diagnosis warrants a high index of suspicion. Epigastric pain, nausea, emesis, and biliary disease are commonly encountered in pregnancy and may serve to detract from consideration of a malignancy. Our case illustrates that acute pancreatitis can be a mode of presentation for pancreatic cancer in a pregnant patient. A diagnosis of pancreatic cancer is devastating, but nonetheless, an early diagnosis provides the patient with an opportunity to make important decisions related to the pregnancy.

REFERENCES


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