8-1-2016

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APA Citation

Davis, J., Bashir, S., Wubneh, H., & Borum, M. L. (2016). Metastatic Pancreatic Adenocarcinoma During Pregnancy.. *ACG Case Reports Journal, 3* (4). http://dx.doi.org/10.14309/crj.2016.163

ACG CASE REPORTS JOURNAL

CASE REPORT | PANCREAS

Metastatic Pancreatic Adenocarcinoma During Pregnancy

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ABSTRACT

We present a rare case of metastatic pancreatic adenocarcinoma diagnosed antepartum. A high index of suspicion must be maintained to diagnose pancreatic cancer during pregnancy. We recommend a thorough history and physical and aggressive pursuit of sensitive imaging in patients with persistent symptoms. If pancreatic adenocarcinoma is diagnosed, a multidisciplinary approach that focuses on patient goals should be undertaken. The effect of pregnancy on tumor growth rates is unknown.

INTRODUCTION

Pancreatic cancer is the third leading cause of cancer-related death in the United States.[1] Diagnosis of pancreatic adenocarcinoma antepartum is, however, exceedingly rare, with 13 cases published to date.[2-14] Of the previously reported cases, the mean maternal age at diagnosis is 35.8 years (range, 25–43 years).[2-14] Nine of the 13 patients were diagnosed during their second trimester of pregnancy, with the remaining patients presenting in the third trimester. No cases were diagnosed in the first trimester of pregnancy.[2-14] Only 5 of the 13 cases were amenable to resection, and in those cases pancreaticoduodenectomy was performed anywhere from 17 weeks gestation to postpartum.[2-14] Eight cases reported patient death within 1 year of diagnosis.[2-14] The longest documented survival was 16 months after diagnosis.[2-14] Fetal outcome was largely positive; one case noted elective termination and there was one spontaneous fetal death, but all other cases reported healthy pregnancies or infants subsequent to diagnosis.[2-14]

CASE REPORT

A 34-year-old gravida 1 para 0 woman with past medical history of multiple sclerosis and cholecystectomy presented at 26 weeks gestation with severe abdominal pain and failure to gain weight appropriately in pregnancy. Her family history was remarkable for pancreatic cancer in her mother, who died at age 47. She did not smoke or drink alcohol. Admission labs were notable for aspartate aminotransferase (AST) 68 U/L, alanine aminotransferase (ALT) 100 U/L, alkaline phosphatase (ALP) 227 U/L, total bilirubin 0.3 mg/dL, lipase 364 U/L, and bile acids 25 µmol/L. Ultrasound showed dilatation of both the common bile duct (CBD) (7.4 mm) and pancreatic duct (9.6 mm). Subsequent magnetic resonance cholangiopancreatography (MRCP) demonstrated a space-occupying lesion in the pancreatic head with a mildly dilated CBD (Figure 1). The differential diagnosis of the lesion included an inflammatory mass due to acute pancreatitis versus neoplasm. Her family history was her only known risk factor for pancreatic cancer. Although her findings were concerning, endoscopic ultrasound was deferred due to the patient's preference. She was treated for acute pancreatitis with inflammatory mass with pain control and pancreatic enzyme replacement (pancreatic lipase, 500 U/kg per meal) in an attempt to ameliorate her pain and address any component of pancreatic insufficiency that may have contributed to her weight loss.

ACG Case Rep J 2016;3(4):e190. doi:10.14309/crj.2016.163. Published online: December 21, 2016.

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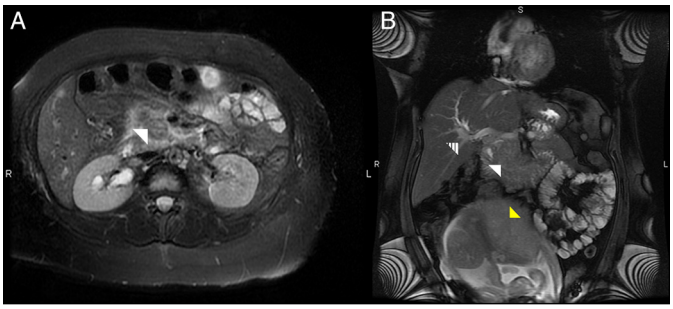

Figure 1. T2-Weighted abdominal magnetic resonance imaging from initial presentation at 26 weeks. (A) Axial view showing a space-occupying lesion in the head of the pancreas (arrow) with ill-defined margins and involvement of the superior mesenteric vein. (B) Coronal view demonstrating a pancreatic head lesion (white arrow) and surrounding edema with mild dilatation of the CBD (striped arrow) and visualization of gravid uterus (yellow arrow).

She returned 1 week later with persistent abdominal pain, weight loss, and emesis. Her liver-associated enzymes were similar to her prior admission values with AST 65 U/L, ALT 76 U/L, ALP 186 U/L, and total bilirubin 0.4 mg/dL. Her AST, ALT, and ALP remained stable, whereas her total bilirubin rose to 3.0 mg/dL. Given the patient's preference to avoid invasive procedures, a second MRCP was performed to reevaluate the previously identified mass in light of her increased bilirubin. Repeat MRCP was again concerning for a pancreatic head mass and increased dilatation of her CBD (Figure 2). Endoscopic ultrasound was performed at 32 weeks gestation and demonstrated a 3.8 x 2.3 cm pancreatic head mass encasing the superior mesenteric vein with celiac and peripancreatic lymphadenopathy (Figure 3). There were no endoscopic luminal findings to explain her emesis. Pathology on fine-needle aspiration of the pancreatic head mass confirmed pancreatic adenocarcinoma (Figure 4). Given her family history and young age at diagnosis, we recommended she undergo genetic counseling. CA 19-9 was 1 U/mL.

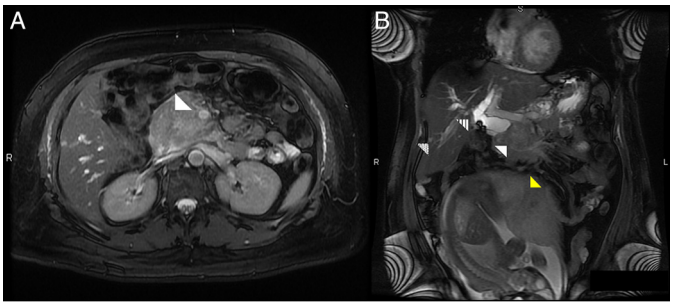

Figure 2. T2-Weighted abdominal magnetic resonance imaging from presentation at 30 weeks. (A) Axial view showing pancreatic head mass (arrow). (B) Coronal view showing gravid uterus (yellow arrow), pancreatic head mass (white arrow), significantly increased dilatation of the CBD (striped arrow), and an incompletely characterized hyperintense liver lesion (dotted arrow) concerning for metastasis.

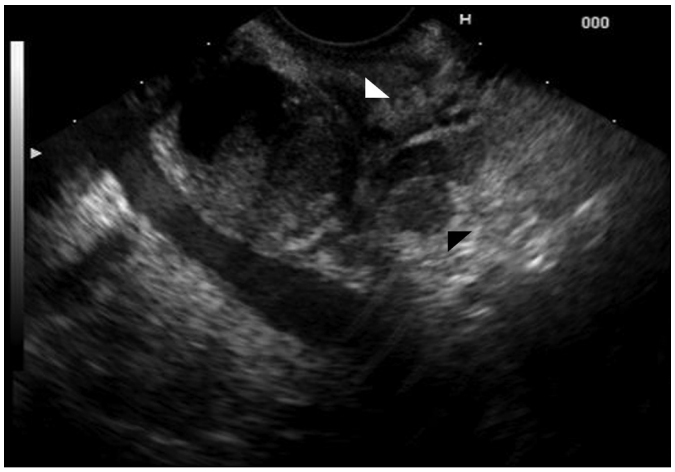

Figure 3. Endoscopic ultrasound of the pancreatic head mass (white arrow) and portal vein demonstrating enlarged peripancreatic lymph node (black arrow).

C-section was performed 2 days after diagnosis, and a healthy male infant was delivered. Pfannestiel incision allowed direct visualization of pancreatic head mass. The mass was large and fixed with local spread and palpable liver lesions grossly consistent with metastases. The patient became jaundiced, and her liver-associated enzymes showed worsening cholestasis with AST 166 U/L, ALT 171 U/L, ALP 1 102 U/L, and total bilirubin 13.6 mg/dL. A palliative biliary stent was placed for her worsening jaundice, and her bilirubin trended down. The patient opted for supportive care after her delivery.

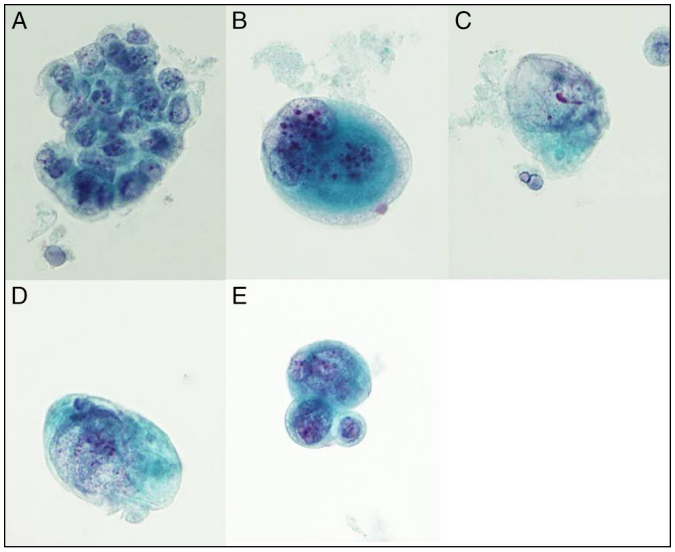

Figure 4. Cytology from fine-needle aspiration of the pancreatic head mass confirming adenocarcinoma. Typical glandular type cells occurring (A) in 3-dimensional cohesive groups and (B–E) singly. These markedly atypical cells are enlarged with overlapping nuclei, chromatin clearing and clumping, increased nuclear to cytoplasmic ratio, and irregular nuclear borders with focally vacuolated cytoplasm. Papanicolaou stain, 50x magnification.

Unfortunately, she died 4 months after her tissue diagnosis. At most recent follow-up, her son was healthy with reportedly normal development at 16 months.

DISCUSSION

Our case exemplifies the challenges of diagnosis, treatment, and prognosis of pancreatic cancer in the pregnant patient. Early diagnosis is critically important in these patients as it affects survival and candidacy for surgery. Diagnosis is challenging in the gravid patient, however, as the symptoms of pancreatic cancer—abdominal discomfort, nausea, and vomiting—mimic those of normal pregnancy. Pregnancy masks red flags like unintentional weight loss and abdominal masses and decreases the sensitivity of noninvasive imaging modalities. We recommend a careful history and physical examination that attends to risk factors for cancer, including family history and tobacco use. Any pregnant patient with persistent abdominal symptoms despite supportive care should be screened with imaging modalities. Patients often present with persistent symptoms and lab abnormalities that are not proportional to initial imaging findings. This indicates that a high index of suspicion for occult malignancy is needed. Although not typically used as a screening tool, CA 19-9 has the potential to be useful as a noninvasive test in gravid patients; it was elevated in 6 cases in the literature, though not in our patient.[2-14]

Once the diagnosis has been made, questions regarding timing and type of therapy arise. Unfortunately, for patients like ours with locally advanced or metastatic disease, surgical intervention does not improve survival. Palliative chemotherapy and/or supportive care may be offered. For patients who present with resectable disease, surgical intervention with pancreaticoduodenectomy has survival benefit. Five antepartum cases in the literature presented with resectable disease. Three broad options are available to these patients: immediate surgical intervention, delay of surgery until postpartum state, or surgery at the earliest age of high fetal viability, approximately 28 weeks.[9] The first option offers the highest risk to the fetus, the second confers the greatest risk to the mother, and the third attempts to balance risk of both mother and fetus, potentially at the expense of both.

Ultimately, a multidisciplinary approach among high-risk obstetrics, surgery, gastroenterology, and the patient herself will inform the decision of timing of intervention in these cases. From a safety perspective, the second trimester is thought to be the optimal time for surgical intervention as the risk of spontaneous termination is high in the first trimester while access to the pancreas may be limited by the size of the uterus in the third trimester.[15]

Prognosis plays a role in therapeutic decision-making as well. Given the paucity of cases available, it is not known if there is a difference in the natural history of pancreatic cancer in pregnant versus non-pregnant patients. There has been speculation that the immunosuppression associated with pregnancy could increase the aggressiveness of some tumors, and pancreatic cancers have estrogen and progesterone receptors that could be affected by the gravid state.[16] Immunohistochemistry was not performed on our patient's tissue to identify the absence or presence of estrogen or progesterone receptors, but this could be an option for future similar cases that may prove informative when making management decisions. As noted above, evaluation of the cases reported thus far in the literature shows that the majority of cases are not resectable at diagnosis, and, of the 5 cases in which the mother survived, only one provided data for longer than 1 year.

DISCLOSURES

Author contributions: J. Davis wrote and researched the manuscript and is the article guarantor. S. Bashir and ML Borum reviewed the manuscript. H. Wubneh provided the figures and reviewed the manuscript.

Financial disclosure: None to report.

Informed consent was obtained from the patient's representative for this case report.

Received April 27, 2016; Accepted September 16, 2016

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