

## Pancreas 2024 Case Scenarios

### PANCREAS CASE #1

52-year-old female went to the ER after an episode of hypotension, generalized abdominal pain and vomiting. She is otherwise in good health.

- CT abdomen/pelvis: Well-circumscribed hypoenhancing 2.9 x 2.7 cm proximal pancreatic body mass, without upstream pancreatic ductal dilation or atrophy, possibly serous cystadenoma. Neuroendocrine tumor is considered less likely.
- MRI Abdomen: Enhancing mass identified in the pancreatic neck and proximal aspect of the pancreatic body measuring up to 2.7 cm. The lesion is not characteristic of an adenocarcinoma due to the lack of upstream dilatation of the main pancreatic duct and pancreatic atrophy. The pattern of enhancement is nonspecific. Correlation with an endoscopic ultrasound and tissue biopsy is advised. Differential diagnostic possibilities would include a neuroendocrine tumor and pancreatic lymphoma although this is less likely due to the absence of lymphadenopathy and splenomegaly. No definitive evidence of liver metastases.
- PET Scan: The focal lesion located in the pancreatic neck does not demonstrate significant somatostatin receptors radiotracer uptake, SUV 3.4, and measures approximately 2.4 x 2.4 cm. There is likely physiologic radiotracer activity in the pancreatic uncinata process with SUV 8.6
- EUS: An irregular subtle poorly defined mass was identified in the genu of the pancreas. The mass was heterogeneous and solid. The echotexture was only slightly different compared to the pancreas parenchyma. The mass measured 33 mm x 24 mm in maximal cross-sectional diameter. The endosonographic borders were poorly defined.
- FNA: Pancreas neck mass fine-needle, biopsy. Solid pseudopapillary neoplasm. Note: Immunohistochemical stains supporting the diagnosis.

Second opinion at our facility (Consultation): Had a long discussion with the patient about her diagnosis, including pertinent anatomy, pathophysiology, differential diagnoses, treatment options. Discussed differentials of pancreatic lesions including benign cysts, premalignant lesions, and malignant lesions. I agreed with the other surgeon's evaluation that she should undergo surgery.

However, I mentioned to the patient I would likely offer a laparoscopic subtotal pancreatectomy and splenectomy. Discussed risks and benefits of both procedures, including among other things risk of pancreatic leak, diabetes, post-splenectomy sepsis, bleeding, infection.

### Operative Procedure Performed:

Laparoscopic subtotal pancreatectomy and splenectomy, intraoperative ultrasound

Findings: Large mass at pancreatic head/neck overlying celiac axis with associated desmoplasia, neovascularization, and distortion of tissue planes. Ultrasound is used to delineate medial edge, which was to the left of the GDA. Subtotal pancreatectomy and splenectomy performed without complication.

## Pathology Report:

GROSS DESCRIPTION: Specimen labeled distal pancreas and spleen is received fresh, excision and formalin time 1346/1404, cold ischemic time less than 1 hour and consists of a subtotal, left sided pancreas, 12 x 4 x 2.1 cm with a small, attached, fatty tissue at the tail and an impact spleen, 7.7 x 4.6 x 2.8 cm.

* <b>SYNOPTIC REPORT:</b>	<b>Pancreas Exocrine tumor, invasive</b>
* <b>Procedure:</b>	<b>Subtotal pancreatectomy</b>
* <b>Tumor location:</b>	<b>Pancreatic body</b>
* <b>Tumor size:</b>	<b>Up to 2.7 cm</b>
* <b>Type:</b>	<b>Solid-pseudopapillary neoplasm</b>
* <b>Grade:</b>	<b>Not applicable</b>
* <b>Extent:</b>	<b>Tumor is limited to pancreas</b>
* <b>Margins, invasive tumor:</b>	<b>Free 0.5 cm from the proximal resection margin</b>
* <b>Margins, dysplasia/intraepithelial neoplasia:</b>	<b>Free</b>
* <b>Treatment effect, primary site:</b>	<b>Not applicable</b>
* <b>Lymphovascular invasion:</b>	<b>None</b>
* <b>Perineural invasion:</b>	<b>Focally present</b>
* <b>Lymph nodes, # total:</b>	<b>19</b>
* <b>Lymph nodes, # involved:</b>	<b>0</b>
* <b>Distant metastases:</b>	<b>Not applicable</b>
* <b>Stage (AJCC 8):</b>	<b>p T2 N0 M (not applicable)</b>
* <b>MSI IHC and Interpretation:</b>	<b>Not applicable</b>
* <b>Tumor block(s) for possible future studies:</b>	<b>A4</b>

• Patient can follow-up with surveillance MRI in 6 months

## PANCREAS CASE #2

Patient presented to the emergency department with complaints of diarrhea, abdominal pain, bloody urine, shortness of breath, and chest discomfort. Patient has a long-standing history of coronary artery disease with multiple stents as well as hypertension and hyperlipidemia status post angioplasty of the left anterior descending currently on aspirin. In addition, patient has a history of obstructive sleep apnea, COPD, diabetes, and obesity as well as COVID in 2020. CT the abdomen performed on admission showed a subtle hypodense lesion in the pancreatic head measuring 2.8 cm suspicious for neoplasm. Intraductal biliary ductal dilatation with gallbladder distention was noted. Recommend outpatient follow-up with PET scan.

### CT ABDOMEN/PELVIS

#### IMPRESSION:

1. 2.4 x 2.8 cm hypodense lesion in the pancreatic head suspicious for a pancreatic neoplasm. Further evaluation with MRI with contrast recommended.
2. Intrahepatic biliary ductal dilatation and gallbladder distention.

### MRI Abdomen:

#### IMPRESSION:

1. 3.7 x 2.8 x 3.6 cm mass in the superior pancreatic head/neck resulting in stricture in the common bile duct, inferior aspect situated approximately 2.7 cm from the level of the ampulla and spanning 1.2 cm in length; early narrowing of the main pancreatic duct.
2. The mass **abuts** superior mesenteric vein, extrahepatic main portal vein, and gastroduodenal artery. No encasement of these vascular structures.
3. No definitive intrahepatic metastases.

### Endoscopic retrograde cholangiopancreatography:

(ERCP) with insertion of stent into bile or pancreatic duct.

The major papilla was identified in the second portion of the duodenum and appeared normal. Successfully cannulated the CBD and advanced the guidewire into the intrahepatic ductal system and contrast was injected. Single high-grade stricture in the mid CBD spanning 1.5 cm. Small sphincterotomy was performed. Stent placed. Stagnant dark bile was seen flowing.

Endoscopic ultrasound (EUS) – The head of the pancreas contained an ill-defined hypoechoic lesion approximately 2.8 x 2.5 cm. It appeared to be causing abrupt cut off of the proximal common bile duct. 22-gauge needle used to perform 3 fine needle biopsies of the mass.

**DIAGNOSIS: Pancreatic head mass fine needle biopsy**

### Pathology Report:

Biopsy FNA: Invasive adenocarcinoma, moderately to poorly differentiated.

## Labs:

LabsCA19-9 (within 3 months) 795.0 (H)

## Medical Oncology:

Underwent neoadjuvant chemotherapy with FOLFIRINOX and completed 7 cycles (at an outside facility)

## Multidisciplinary Tumor Board Discussion:

Patient admitted with cholestasis on XX/XX/XX, found to have a mass on the head of the pancreas. EUS biopsy was performed on XX/XX/XX and confirmed it to be adenocarcinoma, and a fully covered stent was placed. Admitted on XX/XX with chest pain, and was found to have a subsegmental PE, also right inferior frontal gyrus infarction, now on Xarelto.

Underwent neoadjuvant chemotherapy with FOLFIRINOX and completed 7 cycles, which also lead to cardiotoxicity. Ejection fraction is 25%, cardio cleared for surgery with a moderate risk and recommended intraoperative Swan-Ganz and fluid restriction.

Tumor Board Treatment Plan: Tumor board recommendation was to speak to the patient about ablative radiation therapy as a potential option. They also recommend speak to risk management to be involved in the case, if needed.

I explained to him that our typical institutional pathway for borderline resectable pancreas cancer includes induction chemotherapy followed by SBRT and then reassessment for surgery although given his high risk for surgery I would not recommend radiation therapy if he and fact did proceed with surgery as radiation could increase the risk of surgical complexity which would be detrimental to him given his cardiac condition.

He agreed to receive definitive ablative MR-guided SBRT instead of surgery.

## Treatment Summary – Course # 1:

Treatment was delivered to the pancreas, with photons and a(n) MR-guided SBRT technique on the MRIdian MRLinac (treatment unit). A total of 50 Gy was delivered at 10 Gy per fraction (treatment session). A total number of 5 fractions were delivered from the start date of XX/XX/XX to end date XX/XX/XX over 8 elapsed days.

ABDOMEN MRI W WO CON: No significant change in pancreatic head mass with similar involvement of the GDA and common hepatic artery. Multiple new rim-enhancing hepatic lesions with poorly defined margins favor to represent small abscesses over new metastatic disease. Additional wedge-shaped regions of restricted diffusion in the liver may represent cholangitis. Consider short-term MRI after cholangitis treatment. Unless otherwise specified, incidental findings in the body of the report may not need additional follow-up imaging.

Tumor board: Reviewed liver lesions, given significantly elevated tumor marker 11,000 with new appearance of liver lesions, tumor board recommendations likely this is metastatic disease to liver now.

Patient recommended to resume systemic treatment, but chose Hospice.

## PANCREAS CASE #3

### Summary

56 year old man with diabetes mellitus had progressive weakness, nausea, occasional vomiting, constipation, poor appetite and a 15 pound weight loss over the last 6 weeks. He presented to his PCP and had an abdominal ultrasound that identified multiple liver lesions

### Imaging

CT Chest: Gross hepatomegaly with widespread hepatic metastatic disease. 5.4 x 4.1 x 5.3 cm mass lesion within or adjacent to the tail of the pancreas. Splenic vein not well visualized and involvement cannot be excluded. Obvious abdominal or retroperitoneal adenopathy is not identified.

Ultrasound of the spleen – Spleen is enlarged 15.4 cm, splenic vein is patent, no discrete splenic masses are seen.

MRI: Pancreatic tail mass 5.9 x 5.1 x 3.8 cm, no adenopathy. Innumerable hepatic masses favoring mets.

### Labs:

AFP 3.8, CEA 1.7, and CA 19-9 6.8.

MRCP was done showing the pancreatic tail mass, innumerable hepatic mets.

### Pathology:

Biopsy of the liver: Well-differentiated neuroendocrine tumor (NET) grade 3/3.

Ki-67 proliferative index 54%.

### Treatment Discussion:

This well-differentiated neuroendocrine tumor of the tail of the pancreas had a Ki-67 proliferative index of 54% which indicates a more aggressive behavior than well differentiated NET G1 or G2 but a better prognosis than neuroendocrine carcinomas of the pancreas (NEC).

Patients with advanced NET G3 often have a relatively poor response to platinum plus etoposide regimens, and for this reason platinum-based chemotherapy may not be the most appropriate first-line treatment. My recommendation is to initiate chemotherapy with the CAPTEM regimen as soon as possible as the patient is symptomatic and has bulky liver disease. He would receive capecitabine 750 mg/m<sup>2</sup> twice daily on days 1–14 and temozolomide 200 mg/m<sup>2</sup> daily on days 10–14 of a 28-day cycle.

I also recommend to order a Gallium Dotatate PET/CT scan to evaluate the uptake of the NET G3. If there is Dotatate avidity, for second line treatment consideration should be given to therapy with Lutathera (PRRT). Other potential treatments for second line upon disease progression include platinum based chemotherapy and immunotherapy with ipilimumab plus nivolumab.

Sandostatin 30 mg IM every 4 weeks ordered to start AFTER patient completed PET DOTATATE (currently delayed due to limited insurance coverage). Port flush q8 weeks.

Following 5 months on CAPTEM, repeat PET scan was done:

There is extensive disseminated FDG avid metastatic liver disease throughout both the right and left lobes of the liver which appears to have mildly increased in size when compared to prior PET/CT from 04/15/2022. Numerous new or larger FDG avid lesions are identified. Increased FDG activity corresponding to a lucent bone region in the medial right iliac bone with an SUV max of 2.8 that on prior study had an SUV max of 1.5, new 2.3 cm lytic lesion in the spinous process of the L3 vertebral body with an SUV max of 3.5, and new left femur lesion has an SUV max of 3.3. CAPTEM stopped due for progression and need for second line therapy.