

## Pancreas 2021-Case Scenarios

### Imaging Case 1-MRCP

#### Findings

**Lower Chest:** Bilateral segmental and subsegmental filling defects in the lower lobe pulmonary arteries, most likely representing acute pulmonary emboli (16: 20-23). The pulmonary artery is mildly enlarged measuring 2.9 cm. The RV/LV ratio appears preserved. Partially visualized bilateral axillary lymphadenopathy, better characterized on the CT chest (16:36).

**Liver:** Heterogeneously T1 hypointense, mildly T2 hyperintense infiltrative mass occupying segment 5/8, 4 and 2/3, measuring approximately 8.0 x 19.4 cm (3.18). There is associated moderate diffusion restriction and ADC hypointensity. There are additional smaller masses scattered throughout segment 6/9. The right and middle hepatic veins are patent. The left hepatic vein is narrowed and mildly attenuated at its distal portions of the SMV is patent (10:38). The IVC appears compressed by a mass lesion however remains patent.

**Biliary System:** The gallbladder is distended measuring up to 5.5 x 11.8 cm containing multiple gallstones. No wall thickening or pericholecystic fluid. Mildly tortuous cystic duct measuring up to 0.8 cm (16:37, 4 45). There is dilation of the common duct measuring up to 0.8 cm with abrupt transition point at the ampulla. There is diffuse moderate intrahepatic biliary dilatation; the central left intrahepatic bile ducts are completely effaced by tumor. There is thickened enhancement surrounding the ampulla (10:33).

#### Pancreas

**Tumor:** There is heterogeneous hypoenhancement of the pancreatic parenchyma in the head, neck, uncinate process and proximal body with diffuse associated mild diffusion restriction and ADC hypointensity. The pancreas is predominantly T2 hypointense with heterogeneous areas of minimal T2 hyperintensity and T1 hyperintensity. There is a more conspicuous hypoenhancing region which appears more mass like measuring 2.9 x 4.1 cm (19:33). The mass abuts the posterior aspects of segments 2/3 without definite invasion. There is a fat plane between the mass and the adjacent gastric body and bowel loops.

**Vascular structures:** There is complete encasement and narrowing of the mid celiac axis by the pancreatic mass (10:30), with likely distal occlusion of the vessel. There is complete encasement of the SMA at its mid to distal portion with mild attenuation however, remaining patent. The portal splenic confluence and proximal SMV are not visualized, likely occluded by the mass, with associated gastroepiploic collateral formation. The mid to distal portions of the SMV is patent. The bilateral renal arteries and left renal vein are patent.

**Remaining Pancreas:** The pancreatic distal body and tail are severely atrophic. There is a 1.3 cm small area of preserved enhancement in the mid pancreatic body (19:33), likely reflecting normal residual parenchyma. No pancreatic ductal dilatation.

**Pancreatic Duct:** Partially visualized in the proximal body measuring 3 mm (3:26). Not visualized in the remainder pancreatic segments.

**Adenopathy:** Multiple enlarged left retroperitoneal nodes, largest measuring 1.3cm (19:28). Likely metastatic.

**Ascites/Peripancreatic Fluid:** None.

**Spleen:** Normal. Small splenule.

**Adrenal Glands:** Normal.

**Kidneys:** Normal.

**Bowel:** Normal.

**Mesentery, Omentum and Peritoneum:** No peritoneal fluid. Ovoid 1.5 x 1.4 cm T2 hyperintense cystic right para-aortic lesion at the level of T10-T12 without definite internal enhancement (3:16), unchanged compared to the prior CT, likely representing prominent cisterna chyli.

**Vasculature:** Refer to above.

**Bones and Soft Tissues:** Normal.

**Impression**

1. Acute bilateral segmental lower lobe pulmonary emboli. Mildly prominent pulmonary artery diameter. No definite findings of right heart strain.
2. 4.1 cm pancreatic mass with complete encasement of the celiac axis, SMA, and portal splenic confluence, likely ductal adenocarcinoma.
3. Enlarged retroperitoneal lymph nodes, likely metastatic.
4. Diffuse infiltrative hepatic metastases.
5. Left portal, main portal and portoplenic confluence occlusion by combination of the primary mass and hepatic metastases.
6. High-grade extrahepatic biliary obstruction by the pancreatic mass, as well as effacement of the central left intrahepatic ductal system by hepatic metastases.

Based on information in the MRCP complete the following fields

| Data Item          | Value |
|--------------------|-------|
| Primary Site       |       |
| Histology          |       |
| Tumor Size Summary |       |
| Summary Stage 2018 |       |
| cT                 |       |
| cN                 |       |
| cM                 |       |
| cStage             |       |
|                    |       |

## Imaging Case 2-CT A/P

### **Findings**

**Lower Chest:** Cardiomegaly. Bilateral pulmonary nodules in the lung bases largest measuring 1.4 x 2.2 cm in the right lower lobe (3-15), new from 12/13/2000. Trace left pleural effusion with adjacent atelectasis.

**Liver:** Diffusely low in attenuation.

**Biliary System:** No biliary ductal dilatation. Cholelithiasis. No wall thickening or pericholecystic stranding.

**Pancreas:** Focal hypoenhancing mass like enlargement of the pancreatic body measuring 5.0 x 2.9 cm (3-24) with peripancreatic mesenteric stranding. There is atrophy of the distal pancreas tail. Three subcentimeter hypodense lesions in the pancreatic head (5-33 and 35), likely represent branch ductal intrapapillary mucinous neoplasms.

**Spleen:** Not enlarged. No focal lesion

**Adrenal Glands:** No nodule.

**Kidneys:** No mass or hydronephrosis.

**Bowel:** No wall thickening or dilatation.

**Mesentery, Omentum and Peritoneum:** Mesenteric stranding predominantly in the central abdomen and pelvis. Mesenteric nodules, largest 2.2 x 1.3 cm anteriorly in the left upper quadrant (3-26 and 5-17). Small volume ascites in the pelvis with peritoneal enhancement/thickening (5-63). No pneumoperitoneum.

**Pelvic Organs:** Prostatomegaly measuring 6.2 x 6.3 cm.

**Lymph Nodes:** Two prominent left periaortic nodes. The largest measures 2.1 x 1.4 cm (3-22).

**Vasculature:** There is 180-degree encasement of the superior mesenteric artery (3-24 through 26) and abutment of the portal/superior mesenteric vein. The splenic vein is not opacified and likely invaded with small collateral vessels in the left upper quadrant. Soft tissue density surrounding splenic artery.

**Bones and Soft Tissues:** Osteopenia. Degenerative changes with cystic changes involving the endplates of L3-L5 vertebral bodies.

### **Impression**

1. 5.0 cm pancreatic body mass, most likely adenocarcinoma with metastasis to retroperitoneal nodes, lungs, small amount of malignant ascites and peritoneal and omental carcinomatosis. The left upper quadrant 2.2 cm omental mass can be biopsied for tissue confirmation.

2. There is encasement of the splenic artery, invasion of the splenic vein as well as 180-degree encasement of the superior mesenteric artery, and <180 abutment of the portal/superior mesenteric vein.
3. Three subcentimeter hypodense lesions in the pancreatic head likely branch ductal intrapapillary mucinous neoplasms.
4. Fatty liver.
5. Enlarged periaortic lymph nodes most likely malignant

| Data Item          | Value |
|--------------------|-------|
| Primary Site       |       |
| Histology          |       |
| Tumor Size Summary |       |
| Summary Stage 2018 |       |
| cT                 |       |
| cN                 |       |
| cM                 |       |
| cStage             |       |
|                    |       |

## Case Scenario 1

A 55-year-old white female presented to her primary care physician with increasing abdominal pain. On 2/19/21 she had a CT scan of the abdomen and pelvis. This showed a 3.8 cm mass in the body of the pancreas. No abnormalities were seen in lymph nodes or other organs. Pelvis showed no abnormalities. Lab work showed a CA-19-9 of 830. Differential diagnosis includes pancreatitis versus a pancreatic neoplasm.

2/24/21 Endoscopic Ultrasound: 3.8 cm mass in the body of the pancreas, dilated pancreatic duct in the tail of the pancreas. FNA of pancreatic mass.

2/24/21 Pathology Report - FNA Pancreatic neck mass: Malignant cells present consistent with adenocarcinoma.

3/1/21 Surgical Consult: Patient presented with Stage I pancreatic adenocarcinoma. She is here today for a partial pancreatectomy.

### Pancreatic Carcinoma Synoptic Report

**Procedure:** Partial pancreatectomy, pancreatic body/tail

**Tumor Site:** Pancreatic body

**Tumor Size:** Greatest dimension: 4.1 cm

**Histologic Type:** Ductal adenocarcinoma

**Histologic Grade (applies to ductal carcinoma only):** G2: Moderately differentiated

**Tumor Extension:** Tumor invades peripancreatic soft tissues Tumor invades retroperitoneal soft tissue

**Margins:** All margins are uninvolved by invasive carcinoma and high-grade intraepithelial neoplasia

**Proximal Pancreatic Parenchymal Margin:** Uninvolved by invasive carcinoma and pancreatic high-grade intraepithelial neoplasia

**Distance of invasive carcinoma from margin:** 1.5 cm

**Other Margin (s):**

**Specify margin (s):** Posterior (retroperitoneal). Involved by invasive carcinoma

**Distance of invasive carcinoma from margin:** 0.05 cm

**Treatment Effect:** No known presurgical therapy

**Lymphovascular Invasion:** Not identified

**Perineural Invasion:** Present (Extensive)

**Additional Pathologic Findings:** Chronic pancreatitis

**Regional Lymph Nodes:**

**Number of Lymph Nodes Involved:** 3

**Number of Lymph Nodes Examined:** 15

3/12/21 Radiation Therapy Consult: 55-year-old female presented with Stage I pancreatic adenocarcinoma after increasing abdominal pain caused her to see her family physician. She has been deemed not a surgical candidate due to her advanced age and other medical comorbidities. Medical Oncology has recommended concurrent FOLFIRINOX chemotherapy and

radiation which she is considering. I would recommend a short course of 3000 cGy to be completed in 10 fractions using IMRT.

3/13/21 Medical Oncology followup: Phone call received from patient, she wishes to proceed with chemotherapy.

3/21 – 6/15 FOLFIRINOX regimen completed

Radiation Summary

| <b>Txt Site</b>                    | <b>Total Dose</b> | <b>Modality</b> | <b>Dose/fx</b> | <b>Fx</b> | <b>Start</b> | <b>End</b> |
|------------------------------------|-------------------|-----------------|----------------|-----------|--------------|------------|
| Pancreas/retrop<br>eritoneal nodes | 4500<br>cGy       | 6X              | 180            | 25        | 3/22/21      | 6/29/21    |

| Scenario 1                                       |         |                 |         |                    |            |
|--|---------|-----------------|---------|--------------------|------------|
| Primary Site                                     |         |                 |         | Clinical Grade     |            |
| Histology  |         |                 |         | Pathological Grade |            |
| Behavior   |         |                 |         | yc Grade           |            |
|  |         |                 |         | yp Grade           |            |
| Stage Data items                                 |         |                 |         |                    |            |
| AJCC Stage                                       |         |                 |         |                    |            |
| cT   |         | pT              |         | ycT                | ypT        |
| cT Suffix  |         | pT Suffix       |         | ycT Suffix         | ypT Suffix |
| cN   |         | pN              |         | ycN                | ypN        |
| cN Suffix  |         | pN Suffix       |         | ycN Suffix         | ypN Suffix |
| cM   |         | pM              |         | ycM                | ypM        |
| cStage   |         | pStage          |         | ycStage            | ypStage    |
|  |         |                 |         |                    |            |
| Tumor Size Clin                                  |         | Tumor Size Path |         | Tumor Size Summary |            |
| Reg Nodes Pos                                    |         | Reg Nodes Ex    |         |                    |            |
| Summary Stage 2018                               |         |                 |         |                    |            |
| <i>EOD Primary Tumor</i>                         |         |                 |         |                    |            |
| <i>EOD Lymph Regional Nodes</i>                  |         |                 |         |                    |            |
| <i>EOD Mets</i>                                  |         |                 |         |                    |            |
| <b>SSDI's</b>                                    |         |                 |         |                    |            |
| Carbohydrate Antigen 19-9 Pretreatment Lab Value |         |                 |         |                    |            |
| <b>Surgery</b>                                   |         |                 |         |                    |            |
| Surgery Primary Site                             |         |                 |         |                    |            |
| Scope of Regional Lymph Node Surgery             |         |                 |         |                    |            |
| Surgical Procedure/Other Site                    |         |                 |         |                    |            |
| <b>Systemic</b>                                  |         |                 |         |                    |            |
|  |         |                 |         |                    |            |
| Radiation-Scenario 1                             |         |                 |         |                    |            |
|  | Phase 1 | Phase 2         | Phase 3 |                    |            |
| Rad Primary Treatment Volume                     |         |                 |         |                    |            |
| Rad Treatment Modality                           |         |                 |         |                    |            |
| Radiation to Draining Lymph Nodes                |         |                 |         |                    |            |
| Ext Beam Rad Planning Technique                  |         |                 |         |                    |            |
| Dose per Fraction                                |         |                 |         |                    |            |
| Number of Fractions                              |         |                 |         |                    |            |
| Total Dose                                       |         |                 |         |                    |            |
| # of Phases of Rad Tx to this Volume             |         |                 |         |                    |            |
| Rad Treatment Discontinued Early                 |         |                 |         |                    |            |
| Total Dose                                       |         |                 |         |                    |            |
| Reason no Radiation                              |         |                 |         |                    |            |

## Case Scenario 2

A 55-year-old white female presented to her primary care physician with increasing abdominal pain. On 2/19/21 she had a CT scan of the abdomen and pelvis. This showed a 3.8 cm mass in the body of the pancreas. No abnormalities were seen in lymph nodes or other organs. Pelvis showed no abnormalities. Lab work showed a CA-19-9 of 830. Differential diagnosis includes pancreatitis versus a pancreatic neoplasm.

2/24/21 Endoscopic Ultrasound: 3.8 cm mass in the body of the pancreas, dilated pancreatic duct in the tail of the pancreas. FNA of pancreatic mass.

2/24/21 Pathology Report - FNA Pancreatic neck mass: Malignant cells present consistent with adenocarcinoma.

4/30/21 Medical Oncology Consult-patient has completed a full course of neoadjuvant chemoradiation. CT performed after completion of chemoradiation showed a 2cm mass in the body of the pancreas. No abnormalities were seen in lymph nodes or other organs. The patients is a good surgical candidate and has been scheduled for a whipple procedure.

### **Pancreatic Carcinoma Synoptic Report 5/1/21**

**Procedure:** Pancreaticoduodenectomy (Whipple resection), lymph node excision

**Tumor Site:** Pancreatic head

**Tumor Size:** Greatest dimension: 1.9cm (tumor bed)

**Histologic Type:** Ductal adenocarcinoma

**Histologic Grade:** GX: Cannot be assessed

**Tumor Extension:** Tumor invades peripancreatic soft tissues

**Margins:** All margins are uninvolved by invasive carcinoma and high-grade intraepithelial neoplasia

**Margins examined and distance to invasive carcinoma:**

**Pancreatic neck/parenchymal:** 1.2cm

**Uncinate (retroperitoneal/superior mesenteric artery):** 0.08 cm

**Bile duct:** 1.1cm

**Closest Margin:** Uncinate (retroperitoneal/superior mesenteric artery)

**Treatment Effect**

**Present:** Residual cancer with evident tumor regression, but more than single cells or rare small groups of cancer cells

**Lymphovascular Invasion:** Not identified

**Perineural Invasion:** Present

**Regional Lymph Nodes:**

Number of Lymph Nodes Involved: 0

Number of Lymph Nodes Examined: 14



| Scenario 2                      |  |              |                 |                    |  |                    |  |
|---------------------------------|--|--------------|-----------------|--------------------|--|--------------------|--|
| Primary Site                    |  |              |                 | Clinical Grade     |  |                    |  |
| Histology                       |  |              |                 | Pathological Grade |  |                    |  |
| Behavior                        |  |              |                 | yc Grade           |  |                    |  |
|                                 |  |              |                 | yp Grade           |  |                    |  |
| Stage Data items                |  |              |                 |                    |  |                    |  |
| AJCC Stage                      |  |              |                 |                    |  |                    |  |
| cT                              |  | pT           |                 | ycT                |  | ypT                |  |
| cT Suffix                       |  | pT Suffix    |                 | ycT Suffix         |  | ypT Suffix         |  |
| cN                              |  | pN           |                 | ycN                |  | ypN                |  |
| cN Suffix                       |  | pN Suffix    |                 | ycN Suffix         |  | ypN Suffix         |  |
| cM                              |  | pM           |                 | ycM                |  | ypM                |  |
| cStage                          |  | pStage       |                 | ycStage            |  | ypStage            |  |
|                                 |  |              |                 |                    |  |                    |  |
| Tumor Size Clin                 |  |              | Tumor Size Path |                    |  | Tumor Size Summary |  |
| Reg Nodes Pos                   |  | Reg Nodes Ex |                 |                    |  |                    |  |
| Summary Stage 2018              |  |              |                 |                    |  |                    |  |
| <i>EOD Primary Tumor</i>        |  |              |                 |                    |  |                    |  |
| <i>EOD Lymph Regional Nodes</i> |  |              |                 |                    |  |                    |  |
| <i>EOD Mets</i>                 |  |              |                 |                    |  |                    |  |