# **NET CANCER CLINICAL SCENARIOS**

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# Clinical Scenario 1

76 year old white male. Married with no history of cancer. No family history of cancer. Pt is non-smoker. Pt came in with change in bowel habits and abdominal pain.

**Work-up Imaging**

04/04/2018 MRI Brain:

IMPRESSION

1. Typical senescent changes on whole brain images with volume loss and nonspecific white matter change but no acute ischemia, mass or abnormal enhancement.

2. Otherwise, unremarkable MRI of the IACs with and without contrast.

**Biopsy/surgery**

03/28/2018-Endoscopy

EGD

SMALL BOWEL, DUODENUM, BIOPSY: BENIGN SMALL BOWEL MUCOSA WITH:

1. Normal intact villous surface.
2. No significant inflammation, no granulomas.
3. No viral inclusions or other organisms on routinely stained sections.

STOMACH, BODY, BIOPSY: ANTRAL TYPE GASTRIC MUCOSA WITH:

1. Well-differentiated neuroendocrine tumor, grade 1, measuring 4 mm maximally on the slide.

2. Erosion, chronic active inflammation, repair and intestinal metaplasia.

3. No viral inclusions or H. pylori-like organisms identified.

4. No lymphovascular invasion identified.

5. See comment.

Colonoscopy

COLON, CECUM, BIOPSY: COLONIC MUCOSA WITH:

1. Tubular adenoma.

COLON, ASCENDING, BIOPSY: COLONIC MUCOSA WITH:

1. Fragments of tubular adenoma.

COMMENT: The tumor extends broadly to the deep margin and also to a lateral margin. Size and extent of invasion cannot be ascertained from superficial biopsy material. Utilizing appropriate positive and negative controls immunohistochemical stainschromogranin, synaptophysin, AE1/3 and Ki67 are performed on specimen B. The tumor is positive for AE1/3, synaptophysin and chromogranin. Ki67 marks an estimated 2% of tumor cell nuclei. The overall findings are consistent with the rendered diagnosis of a grade 1 well-differentiated neuroendocrine tumor based on partial sampling. Clinical correlation is recommended.

No further treatment.

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| Scenario 1 |
| Primary Site | C16.2 | MP Rule | M2 | Clinical Grade | 1 |
| Histology | 8249 | H Rule | H11 | Pathological Grade | 9 |
| Behavior | 3 |  |  | Post Therapy Grade |  |
|  |  |
| Stage Data items |
| *Clinical Tumor Size* | 999 | *Pathological Tumor Size* | 999 | Tumor Size Summary | 999 |
| AJCC Stage |
| Clinical T | cTX | Pathological T |  | Post-therapy T |  |
| cT Suffix |  | pT Suffix |  | pT Suffix |  |
| Clinical N | cN0 | Pathological N |  | Post-therapy N |  |
| cN Suffix |  | pN Suffix |  | pN Suffix |  |
| Clinical M | cM0 | Pathological M |  | Post-therapy M |  |
| Clinical Stage  | 99 | Pathological Stage | 99 | Post-therapy Stage |  |
| Summary Stage 2018  | 1 – Local | Diagnostic Staging Procedure | 02 |
| *EOD Primary Tumor* | 100 | Surgery Codes |
| *EOD Lymph Regional Nodes* | 000 | Surgical Procedure of Primary Site | 00 |
| *EOD Mets* | 00 | Scope of Regional Lymph Node Surgery | 0 |
| Regional Nodes Positive | 98 | Surgical Procedure/ Other Site | 0 |
| Regional Nodes Examined | 00 | Systemic Therapy Codes |
| Lymphovascular Invasion | 0 | Chemotherapy | 00 |
|  |  | Hormone Therapy | 00 |
|  |  | Immunotherapy | 00 |
|  |  | Hematologic Transplant/Endocrine Procedure | 00 |
|  |  | Systemic/Surgery Sequence | 00 |

# Clinical Scenario 2

Patient is an 80 year old white female. Non-smoker and no etoh. No personal hx of ca. Family history of son with colon cancer and father with liver cancer. Patient presented with complaints of abdominal pain, nausea, and diarrhea.

**Work-up Imaging**

02/05/2018 CT Abd/Pelvis:

IMPRESSION:

1. Findings consistent with small bowel obstruction with transition point within the left lower quadrant of the abdomen where there appears to be an area of soft tissue nodularity either within or case in portion of a loop of small bowel within the left lower quadrant. Primary tumor is well as metastatic implant may be considerations.

2. 3.4 cm low-attenuation lesion within the inferior aspect of the right hepatic lobe within segment 6. Given the appearance metastatic disease would be in the differential diagnosis.

3. Few tiny areas of soft tissue nodularity within the omentum which may represent omental metastasis.

4. Cholelithiasis.

5. No evidence of free intraperitoneal gas or abscess.

02/05/2018 EXAMINATION: ACUTE ABDOMINAL SERIES

1. No evidence of acute pulmonary disease.

2. Multiple air-fluid levels within loops of small bowel and colon which may be indicative of enterocolitis or developing obstruction.

3. No evidence of free intraperitoneal gas.

4. Lucent centered calcifications within the right upper quadrant which could be related to cholelithiasis.

02/05/2018 EXAMINATION: ABDOMEN, COMPLETE US

IMPRESSION:

1. Cholelithiasis without definitive sonographic evidence of cholecystitis.

2. 2.7 cm hyperechoic liver lesion which is nonspecific. A hemangioma could have a similar appearance but metastatic disease is difficult to exclude given the other CT findings.

3. Coarse hepatic echotexture which could be indicative of cirrhosis.

2/6/2018 EXAMINATION: ABDOMEN 1 VIEW RAD

IMPRESSION:

1. Contrast in the rectosigmoid region from prior CT procedure.

2. Cholelithiasis.

2/21/2018 EXAMINATION: CHEST W/CONTRAST CT

IMPRESSION:

No evidence of metastatic disease.

3/4/2018 EXAMINATION: ABDOMEN/PELVIS W/CONTRAST CT

IMPRESSION:

1. Postsurgical changes from small bowel resection related to neuroendocrine tumor.

2. Tiny peripherally enhancing fluid collection anterior to the small bowel anastomosis located between the anastomosed small bowel loops and abdominal wall. Collection measures up to 1.8 cm and may represent a tiny abscess collection.

3. No evidence of bowel obstruction or free intraperitoneal gas.

4. 3 cm low-attenuation lesion within the right hepatic lobe which may represent a patent metastasis.

5. Few areas of nodularity within the greater omentum which may represent metastatic disease.

6. Moderate amount of stool within the rectum.

7. Tiny ventral abdominal hernia containing fat.

8. Cholelithiasis.

**Biopsy/surgery**

02/06/2018 Segmental resection, small intestine

**Pathology**

Small bowel, excision (A):

1. Multifocal Grade 2 neuroendocrine tumor with extension into the peri-bowel soft tissue.

2. One stapled margin involved by neuroendocrine tumor. (See comment)

3. Radial margin uninvolved by neuroendocrine tumor.

4. Lymphvascular invasion present.

5. Perineural invasion present.

6. Metastatic neuroendocrine tumor involving two of six lymph nodes (2/6).

Omentum, excision (B): Metastatic neuroendocrine tumor.

Comment: The bowel is unoriented and it is unclear whether the involved stapled margin represents the proximal or distal margin.

GROSS DESCRIPTION

Two specimens are received.

Specimen A is received fresh and placed in formalin labeled small bowel with mass and consists of an unoriented segment of small bowel measuring 14 cm in length by up to 4 cm in diameter. There is attached mesentery measuring 10.5 x 4.5 x 1 cm. The bowel margins are stapled with the staple lines measuring 4.3 and 4.7 cm in length. The serosal surface is red tan with puckering in the area of the mass. The mesenteric margin is inked blue and the serosal surfaces are inked green. The bowel is opened to reveal a circumferential mass obstructing the small bowel. This is located 6 cm from one stapled margin, 4 cm from the opposing stapled margin, and 2.9 cm from the mesenteric margin. The mass measures 2 x 1.5 x 1.3 cm. The mass extends into the peribowel soft tissues grossly. The remainder of the mucosa is tan and folded. Representative sections are submitted as follows: AA-AB, stapled margin; AC-AF, mass entirely; AG, 5 candidate lymph nodes; AH, 3 candidate lymph nodes; AI, 1 candidate lymph node. Specimen B is received fresh and placed in formalin labeled omentum and consists of an unoriented fragment of yellow-tan fibroadipose tissue measuring 8.5 x 6.2 x 1 cm. The omentum is sectioned to reveal multiple tan nodules ranging from 0.1 up to 0.3 cm in greatest dimension. Representative sections are submitted in

blocks BA-BB.

Procedure: Segmental resection, small intestine

* Tumor Site: Jejunum (per surgeon)
* Tumor Size: 2 x 1.5 x 1.3 cm
* Tumor Focality: Multifocal (specify number of tumors: 2)
* Histologic Type and Grade: G2 Well-differentiated neuroendocrine tumor
* Mitotic Rate: 2-20 mitoses/2 mm2
* Specify mitoses per 2 mm2: 2
* Ki-67 Labeling Index: 3% to 20%
* Specify Ki-67 percentage: 11%
* Tumor Extension: Tumor invades through the muscularis propria into subserosal tissue without penetration of overlying serosa
* Margins:
	+ Proximal and Distal Margins: One stapled margin is involved by neuroendocrine tumor. The specimen is unoriented and it isn’t possible to determine whether this represents the proximal or distal margin.
	+ Radial or Mesenteric Margin: Uninvolved by tumor
* Lymphovascular Invasion: Present
* Perineural Invasion: Present
* Large Mesenteric Masses (>2 cm): Not identified

Regional Lymph Nodes:

* Lymph Node Examination:
	+ Number of Lymph Nodes Involved: 2
	+ Number of Lymph Nodes Examined: 6
* Ancillary studies: Immunohistochemical stains for synaptophysin and chromogranin are performed to further characterize the neoplastic cells and KI-67 is performed to assess the proliferation index of the neoplastic cells. Appropriate controls for all immunohistochemical stains are as expected.
* Synaptophysin: Positive
* Chromogranin: Positive
* KI-67: See above for results

**Treatment**

3/1/2018 Patient started on Gleevec post-operatively.

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| Scenario 2 |
| Primary Site | C17.1 | MP Rule | M2 | Clinical Grade | 9 |
| Histology | 8249 | H Rule | H11 | Pathological Grade | 2 |
| Behavior | 3 |  |  | Post Therapy Grade |  |
|  |  |
| Stage Data items |
| *Clinical Tumor Size* | 999 | *Pathological Tumor Size* | 020 | Tumor Size Summary | 020 |
| AJCC Stage |
| Clinical T | cTX | Pathological T | pT3 | Post-therapy T |  |
| cT Suffix |  | pT Suffix | (m) | pT Suffix |  |
| Clinical N | cN0 | Pathological N | pN1 | Post-therapy N |  |
| cN Suffix |  | pN Suffix |  | pN Suffix |  |
| Clinical M | cM1c | Pathological M | pM1c | Post-therapy M |  |
| Clinical Stage  | IV | Pathological Stage | IV | Post-therapy Stage |  |
| Summary Stage 2018  | 7- Distant | Diagnostic Staging Procedure | 00 |
| *EOD Primary Tumor* | 300 | Surgery Codes |
| *EOD Lymph Regional Nodes* | 300 | Surgical Procedure of Primary Site | 30 |
| *EOD Mets* | 50 | Scope of Regional Lymph Node Surgery | 5 |
| Regional Nodes Positive | 2 | Surgical Procedure/ Other Site | 4 |
| Regional Nodes Examined | 6 | Systemic Therapy Codes |
| Lymphovascular Invasion | 1 | Chemotherapy | 02 |
|  |  | Hormone Therapy | 00 |
|  |  | Immunotherapy | 00 |
|  |  | Hematologic Transplant/Endocrine Procedure | 00 |
|  |  | Systemic/Surgery Sequence | 3 |

# Clinical Scenario 3

27 year old male with pancreas mass found incidentally on CT scan when he presented with acute appendicitis in December 2017. Patient is a non-smoker with no former history of cancer. No family history of cancer is noted.

**Work-up Imaging**

**7/12/18 CT Scan:** Liver, spleen, adrenal glands, and gallbladder are unremarkable. 11 mm cyst in the body tail junction of the pancreas. There is also a nonspecific asymmetric area of enhancement at the body tail junction and measures up to 2.4 cm. No evidence for acute pancreatitis. 1.4 cm cyst in the upper pole right kidney. 2 mm non-obstructing calculus lower pole left kidney. Bowel loops are non-dilated. The appendix is dilated with mild surrounding stranding. The appendix measures up to 11 mm in diameter. No evidence for abscess or perforation. Pelvis with contrast: No pelvic mass or fluid. No aggressive appearing bone lesion.

IMPRESSION:

Mild or early acute appendicitis. No evidence for abscess or rupture. 11 mm cyst within adjacent nonspecific area of asymmetric enhancement of the body tail junction of the pancreas. Recommend non-emergent MRI of the abdomen including MRCP sequences.

**7/15/18 MRI of the Abdomen:** Small solid enhancing mass within the pancreas at the junction of the pancreatic body and tail measuring about 2.5 cm with some adjacent small cystic spaces. The etiology of this lesion is unclear. Cystic pancreatic neuroendocrine tumor is a possibility. Consider referral for endoscopic ultrasound and potential FNA for further characterization. Otherwise, imaging observation in six months is indicated. The remainder of the examination is negative.

**Biopsy/surgery**

**7/21/18 Pancreas, Body and Tail, Mass, Endoscopic Ultrasound Guided Fine Needle Aspiration**

Pathology:

* Positive for neoplastic cells, consistent with pancreatic neuroendocrine tumor
* Cell block: Pancreatic neuroendocrine tumor, see note.
* Note: Immunohistochemical stains were performed (cell block) with the following results:
* Synaptophysin: Positive
* Chromogranin: Negative
* Beta Catenin: Negative
* LCA: Negative
* Ki-67: Less than 1%

These results combined with the morphology support the above diagnosis.

8/3/18 Operative Procedure: Laprascopic Subtotal Pancreatectomy and Laparascopic Retroperitoneal Lymph Node Dissection

**Pathology**

 Procedure: Distal pancreatectomy and splenectomy

* Tumor Site: Pancreatic tail
* Histologic Type and Grade: G2: Well-differentiated neuroendocrine tumor
* Mitotic Rate: 2-20 mitoses / 2 mm2
* Ki-67 Labeling Index: 3% to 20%
* Tumor Size: 2 Centimeters (cm)
* Tumor Focality: Unifocal
* Tumor Extension: Tumor is limited to the pancreas
* Lymphovascular Invasion: Present
* Perineural Invasion: Not identified
* Margins
* Proximal Pancreatic Parenchymal Margin: Uninvolved by tumor
* Number of Lymph Nodes Involved: 0
* Number of Lymph Nodes Examined: 9
* Spleen: Negative for malignancy

**Medical Oncology Consult:**

* No further treatment recommended

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| Scenario 3 |
| Primary Site | C25.2 | MP Rule | M2 | Clinical Grade | 9 |
| Histology | 8249 | H Rule | H11 | Pathological Grade | 3 |
| Behavior | 3 |  |  | Post Therapy Grade |  |
|  |  |
| Stage Data items |
| *Clinical Tumor Size* | 025 | *Pathological Tumor Size* | 020 | Tumor Size Summary | 020 |
| AJCC Stage |
| Clinical T | cT2 | Pathological T | pT2 | Post-therapy T |  |
| cT Suffix |  | pT Suffix |  | pT Suffix |  |
| Clinical N | cN0 | Pathological N | pN0 | Post-therapy N |  |
| cN Suffix |  | pN Suffix |  | pN Suffix |  |
| Clinical M | cM0 | Pathological M | cM0 | Post-therapy M |  |
| Clinical Stage  | 2 | Pathological Stage | 2 | Post-therapy Stage |  |
| Summary Stage 2018  | 1 - Local | Diagnostic Staging Procedure | 02 |
| *EOD Primary Tumor* | 100 | **Surgery Codes** |  |
| *EOD Lymph Regional Nodes* | 000 | Surgical Procedure of Primary Site | 30 |
| *EOD Mets* | 00 | Scope of Regional Lymph Node Surgery | 5 |
| Regional Nodes Positive | 0 | Surgical Procedure/ Other Site | 0 |
| Regional Nodes Examined | 9 | Systemic Therapy Codes |  |
| Lymphovascular Invasion | 1 | Chemotherapy | 00 |
|  |  | Hormone Therapy | 00 |
|  |  | Immunotherapy | 00 |
|  |  | Hematologic Transplant/Endocrine Procedure | 00 |
|  |  | Systemic/Surgery Sequence | 0 |