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59 yo male with past medical history of prostate carcinoma, presented with upper abdominal pain

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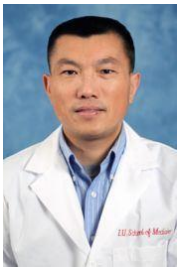

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Clinical History:

59 yo male with past medical history of prostate carcinoma, presented with upper abdominal pain radiating to the back and melena. CT scan to rule out a dissecting aortic aneurysm revealed an abnormally enhancing, 8x9 cm mesenteric mass that was adherent to the small bowel.The clinical differential diagnosis included desmoid tumor, carcinoid tumor, sclerosing mesenteritis and lymphoma.

Radiology: (Figure 1.0-1.3)

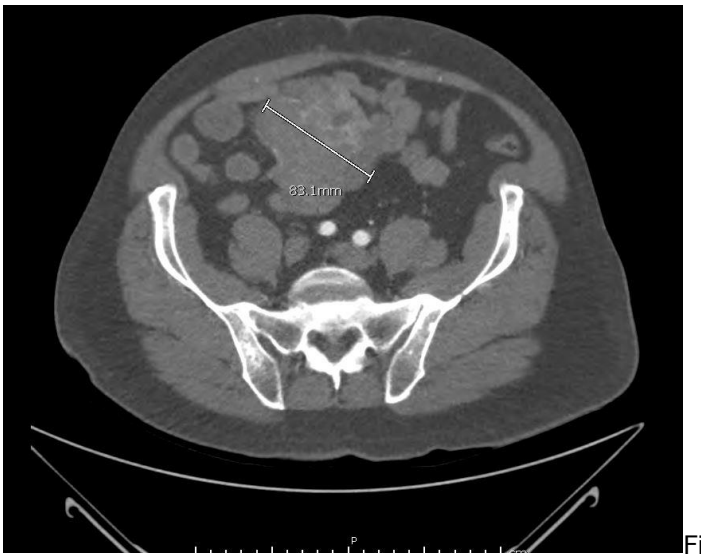


Fig 1.

1.0- Computer tomography (CT) abdomen and pelvis, coronal section

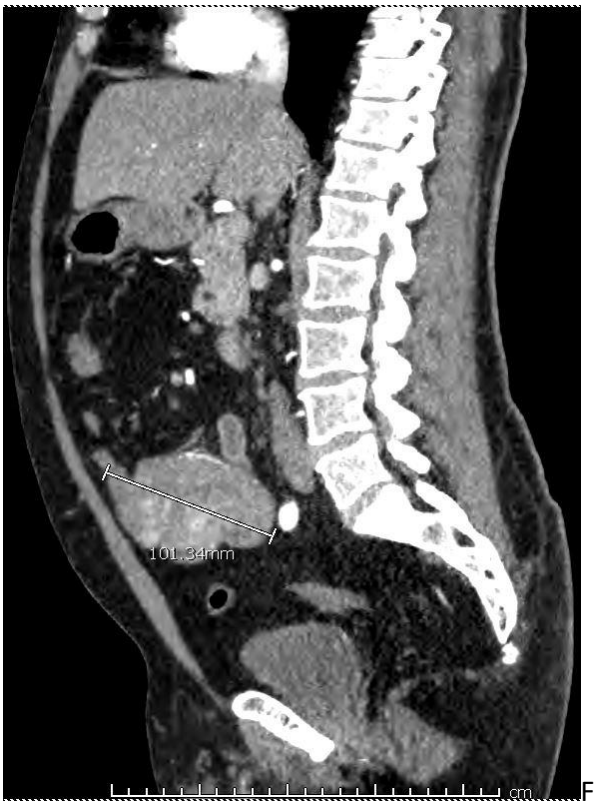


Fig. 1.1

1.1- Computer tomography (CT) abdomen and pelvis, axial section

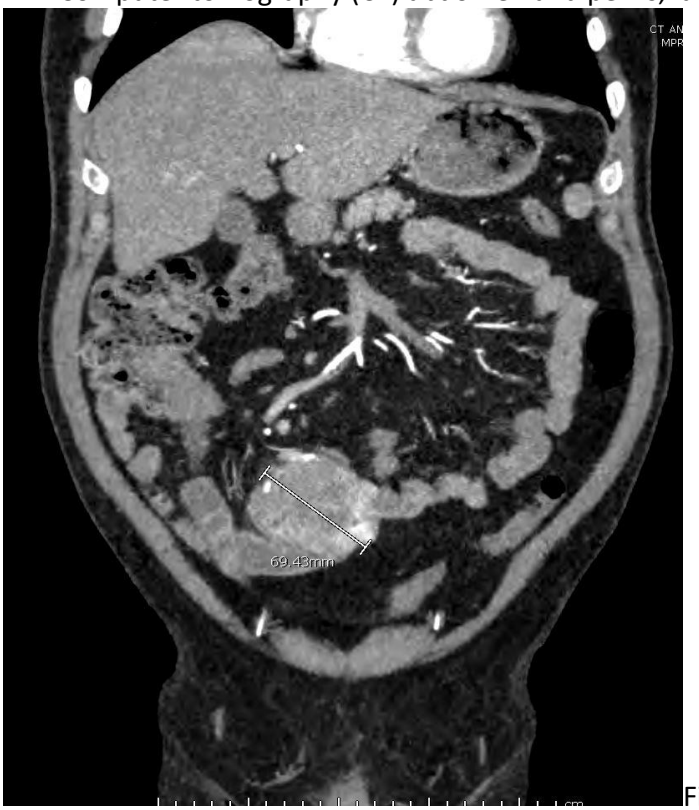


Fig 1.2

1.2- Computer tomography (CT) abdomen and pelvis, sagittal section

Gross: Small bowel resection specimen revealed a 10.5 x 6x 5.5 cm, friable, partially degenerated, nodular mesenteric mass that extends to the lumen of small bowel. Cut surface was pink tan- red brown solid with areas of cystic degeneration.

Micro: The tumor was noted to extend through the muscularis propria and ulcerating the overlying intestinal mucosa (Fig2.0). The tumor cells were arranged in nests, sheets and short fascicles with characteristic radial arrangement around blood vessels (Fig 2.1-2.3). Cytologically, they were variably epithelioid, spindly and rhabdoid with abundant clear, granular and palely eosinophilic cytoplasm and round vesicular nuclei with small nucleoli. (Fig 2.4-2.6)

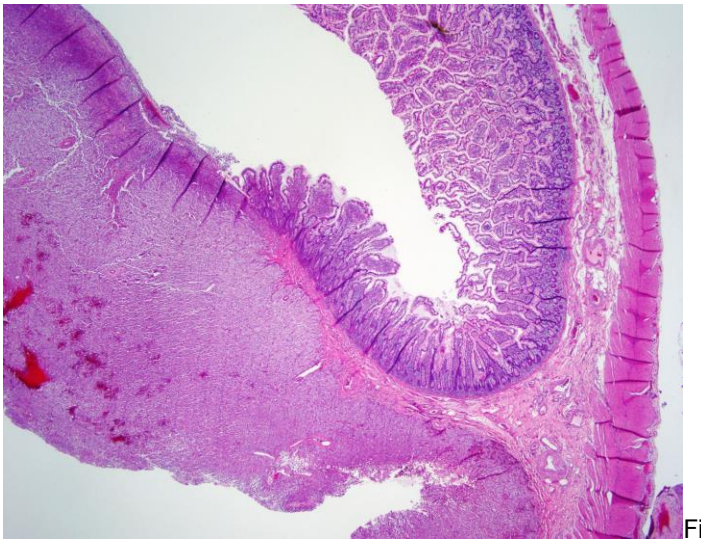


Figure 2.0

2.0- Submucosal mass, ulcerating overlying mucosa. 20x

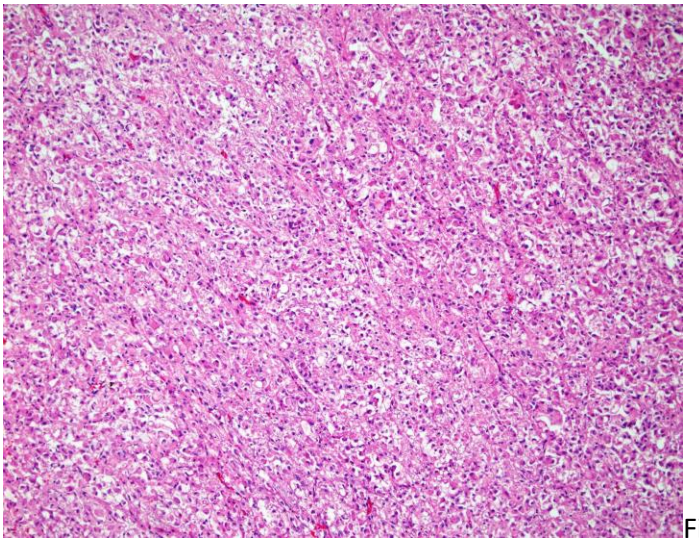


Figure 2.1

2.1-2.3- Tumor cells arranged in nests, and sheets showing epithelioid -spindly morphology. 200x

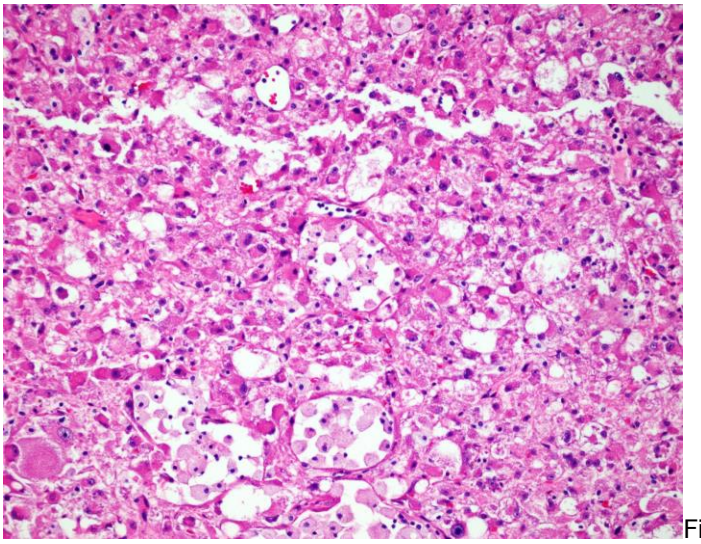


Figure 2.2

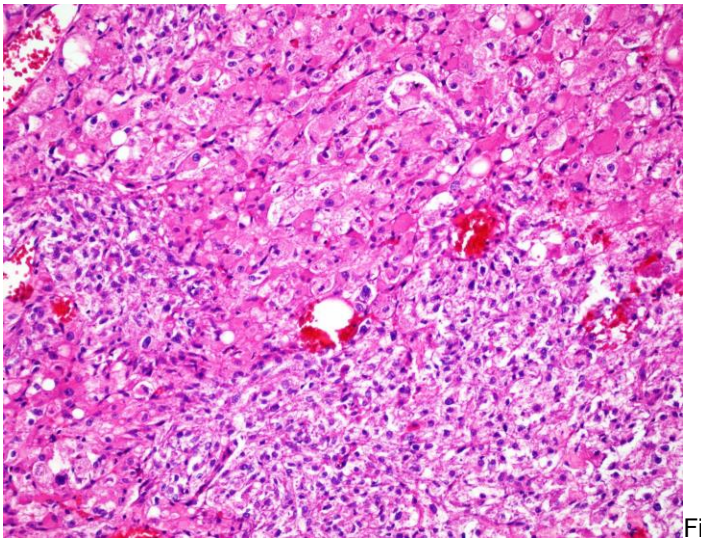


Figure 2.3

2.4-2.6- Tumor cells showing abundant clear to eosinophilic cytoplasm, with rhabdoid like features. 400x

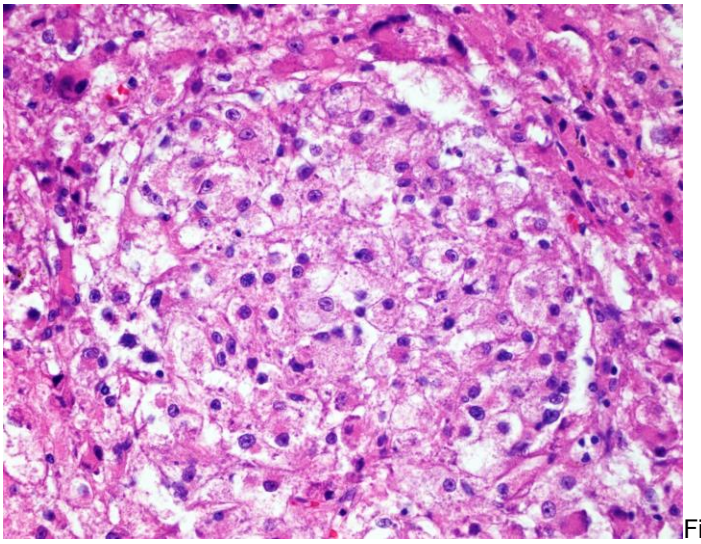


Figure 2.4

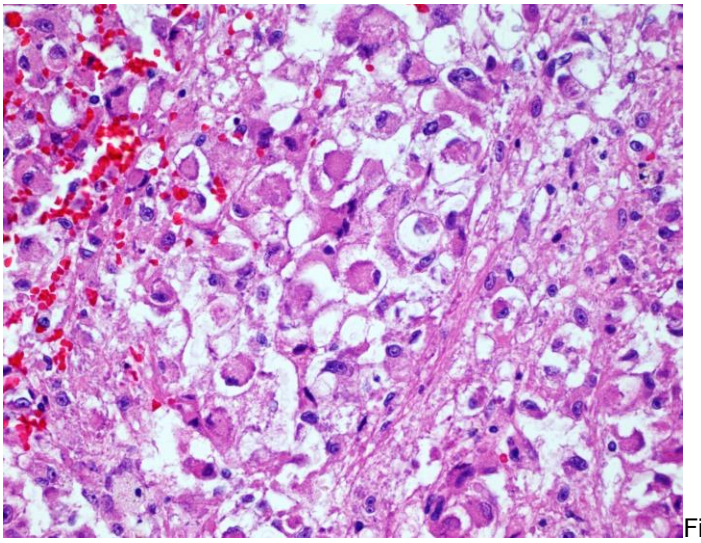


Figure 2.5

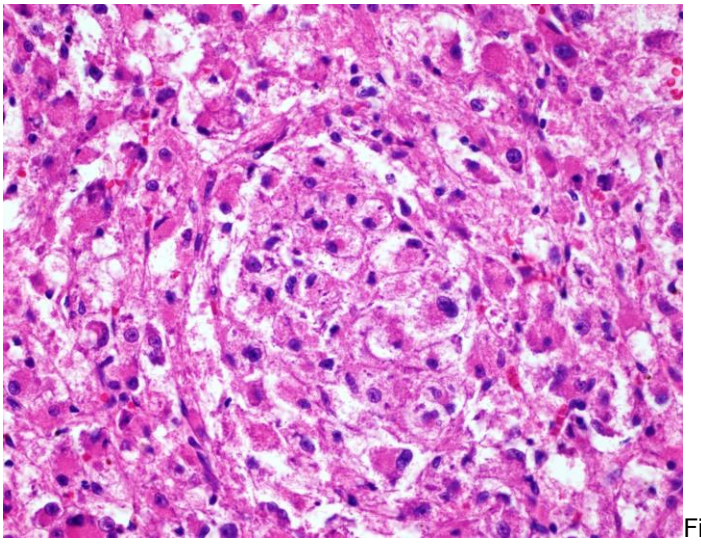


Figure 2.6

Immunohistochemical staining: Fig 2.7-2.9

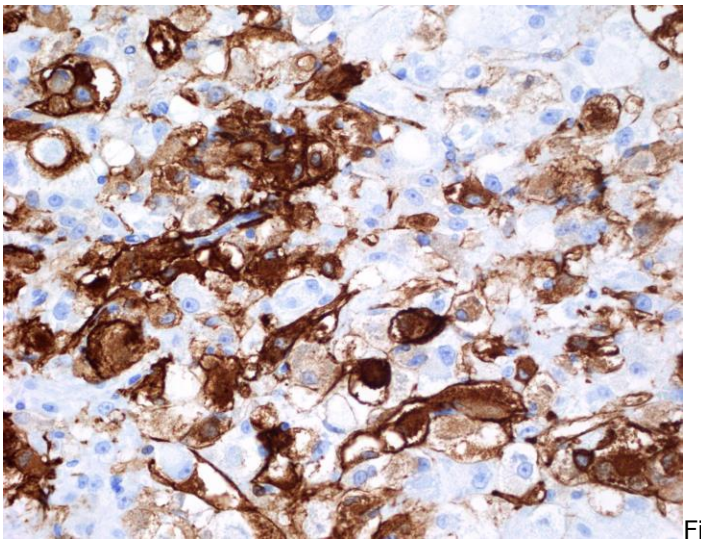


Figure 2.7

2.7Immunohistochemical stain for smooth muscle actin; 400x

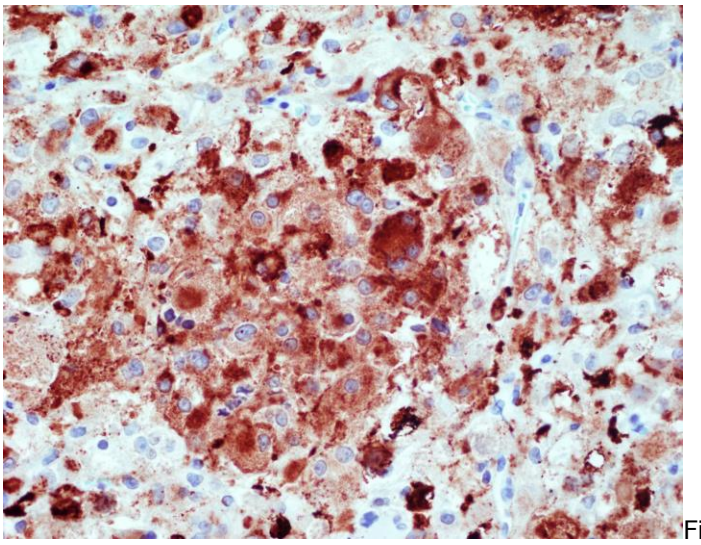
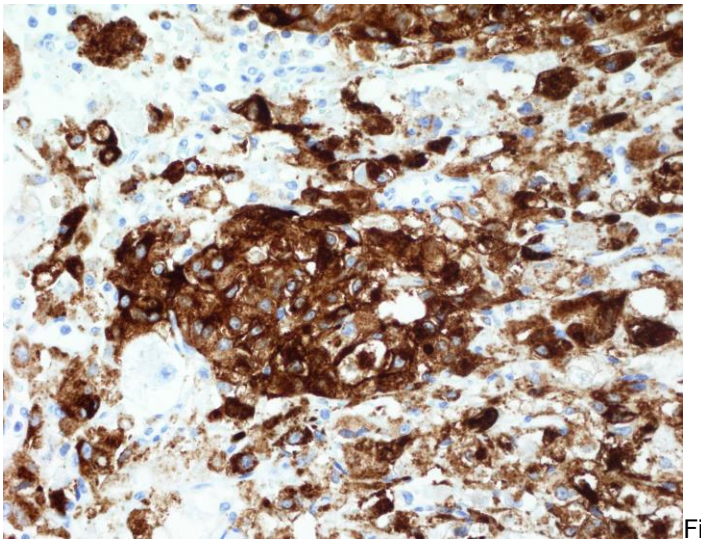


Figure 2.8

2.8 Immunohistochemical stain for Melan A; 400x

 Figure 2.9

2.9 Immunohistochemical stain for HMB-45; 400x

Final Diagnosis and Discussion:

Perivascular epithelioid cell tumor (PEComa)

Perivascular epithelioid cell tumors (PEComas) are an unusual family of neoplasms that show dual smooth muscle and melanocytic differentiation. They arise at any site including soft tissues of extremities, visceral soft tissue (clear cell, 'sugar tumor', lymphangioleiomyomatosis), kidney (angiomyolipoma), gynecologic tract, and urinary tract, as well as liver pancreas and GI tract(1). Limited data exist on PEComas occurring in the GI tract, but majority of the cases seem to occur in the colon(2-4)In general, PEComas of the visceral sites show female predilection and typically occur in middle aged adults, with a median patient age of 46 years (5). Presenting symptoms of PEComas involving the GI tract may include abdominal pain, GI bleed and obstructive symptoms. Although angiomyolipomas are often associated with tuberous sclerosis, GI PEComas are usually sporadic(3). However, regardless of the presence or absence of the clinical syndrome, most PEComas show loss of TSC1 and TSC2, resulting in upregulation of the mTOR pathway, which can be targeted with mTOR inhibitors such as sirolimus (6-7). Less frequently, translocations involving the TFE3 gene are present(8).

Tumors are usually reasonably well circumscribed but unencapsulated. The cut surface is usually white and solid and may show areas of hemorrhage. Tumor size ranges from 3 cm to 6 cm.

The tumor cells of PEComa typically grow in nests, sheets, or short fascicles, and show a characteristic radial arrangement around blood vessels. The cells are variably epithelioid – spindled with abundant clear, granular, and pale eosinophilic cytoplasm and round vesicular nuclei with small nucleoli. The cells may also show myoid appearance. Atypia is variable within tumors; malignant forms of PEComa may show striking cytologic atypia. Mitosis is variable with malignant tumors showing higher mitotic rate and necrosis. The vascular network is usually prominent and composed of capillaries and medium-sized thin walled vessels.

Given the potentially wide differential diagnosis for these tumors, immunohistochemistry is usually needed to confirm a diagnosis of PEComa. PEComa shows immunohistochemical staining for both myoid and melanocytic differentiation. Smooth muscle markers (alpha-isoform actin, muscle specific, desmin, caldesmon, calponin and smooth-muscle myosin) are variably expressed in terms of intensity and extent. Similarly, markers of melanocytic differentiation (HMB-45, MART-1, tyrosinase and microphthalmia transcription factor [MiTF]) are also variably expressed. HMB-45 is the most frequent ly expressed with expression of S100 being uncommon in PEComa. TFE3 protein is present in a subset of PEComas with TFE3 gene fusions. The expression of TFE3 is mutually exclusive with MiTF expression.(8).KIT, keratin, and CD34 expression are typically absent(5).

The main differential diagnostic considerations for PEComas of the GI tract include pure smooth muscle tumors (leiomyoma and leiomyosarcoma; HMB45-; Melan A-), epithelioid GIST(KIT+; DOG1+), clear cell sarcoma (S100+; SMA-; Desmin-). The translocation t(12;22)(q13;q12) is also detected in clear cell sarcoma, paraganglioma (synaptophysin+; chromogranin+), metastatic renal cell carcinoma (EMA +; PAX-8 +), and metastatic melanoma (S100 +; SMA-; desmin-).

PEComas are tumors of variable and somewhat unpredictable biologic potential. In most cases, they pursue a benign course, but in deep visceral soft tissues, these lesions show a range of clinical behaviors ranging from benign to aggressive, suggested by the presence of marked atypia, high mitotic activity, or necrosis.

References:

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