



DEPARTMENT OF PATHOLOGY

Case of the Week

Gastrointestinal & Hepatic Pathology: Poorly Differentiated Adenocarcinoma of the Stomach with Metastasis to the Liver

Prepared by: Katherine Weng MD (Resident) and Jonathan Melamed, MD (Attending)

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History

A 60-year-old female with past medical history of hyperlipidemia, presented with history of dyspnea for one week. CT PE was negative for PE but revealed a liver mass. The patient underwent an IR guided liver biopsy which revealed poorly differentiated carcinoma. The tumor cells were positive for CAM5.2, CDX-2 and negative for synaptophysin, chromogranin, CK7, Ck20, Pax8, GATA-3, Glypican 3, Arginase. Ki-67 was 85%. The patient decompensated due to disordered liver function and underwent autopsy.

Gross Images:

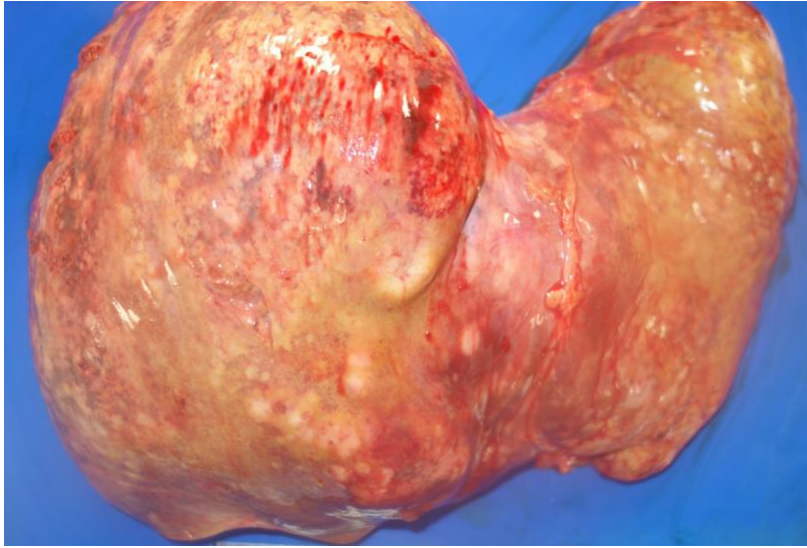


Figure 1: Gross image of liver showing multiple tumor nodules in a non cirrhotic background.

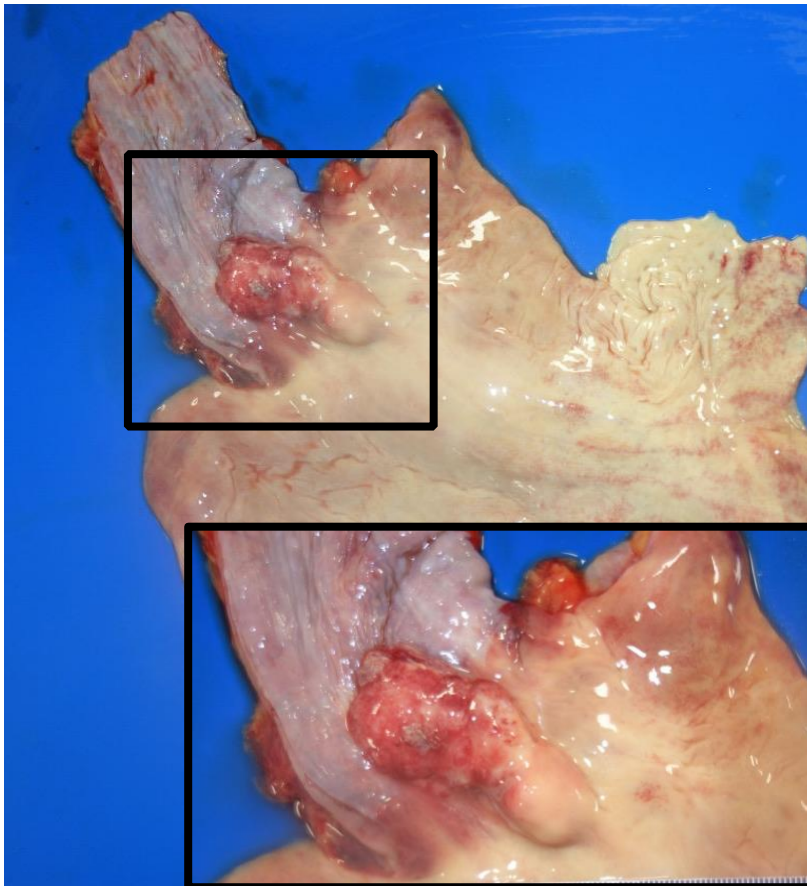


Figure 2: Gross image of tumor of the stomach involving the gastroesophageal junction and extending into the esophagus.

Microscopic Images:

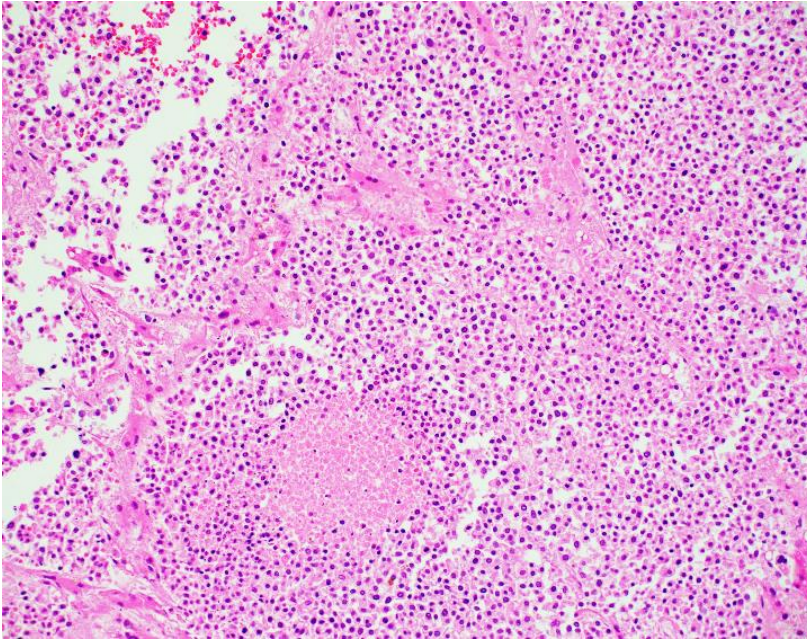


Figure 3: Liver tumor with a monomorphic population of hyperchromatic cells with focal necrosis(H&E, 100X)

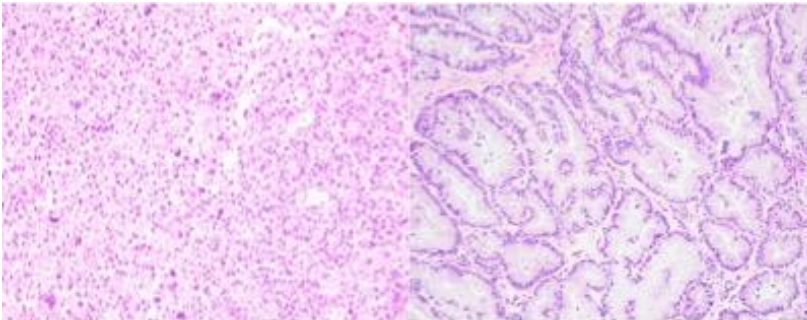


Figure 4: Gastric tumor with pleomorphic atypical cells with granular cytoplasm and prominent mitoses. Multi-nucleated giant cells are present. The carcinoma shows two components. Some parts of the tumor have tubular glandular differentiation with mucin however the majority of the tumor shows a solid component of undifferentiated small cells (poorly differentiated component) (H&E, 200X).

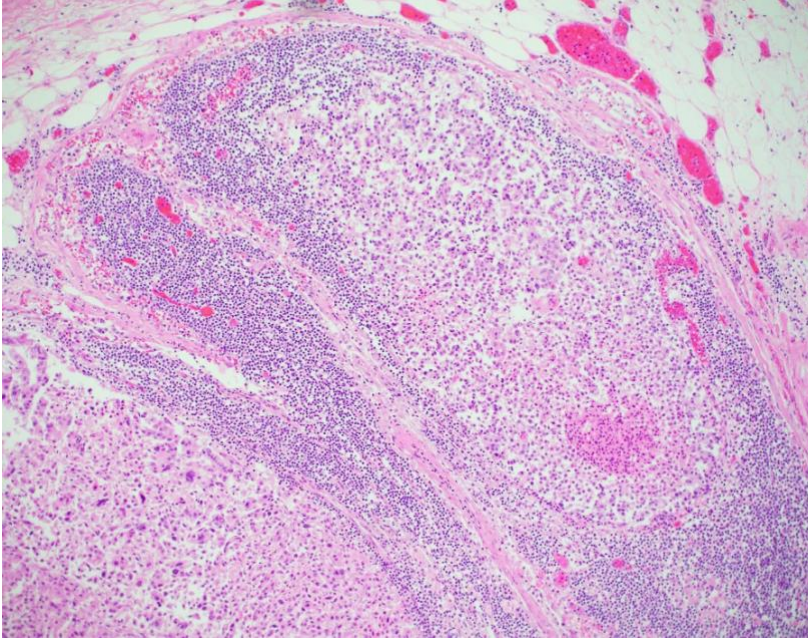


Figure 5: Metastatic carcinoma in regional lymph node (H&E, 200X)

Immunohistochemistry:

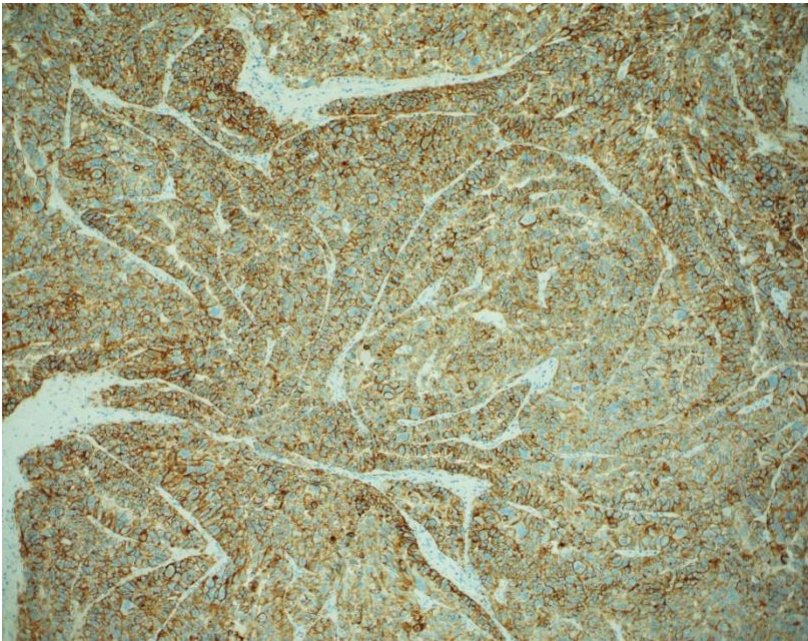


Figure 6: Tumor cells highlighted by MOC-31 (MOC-31, 200X)

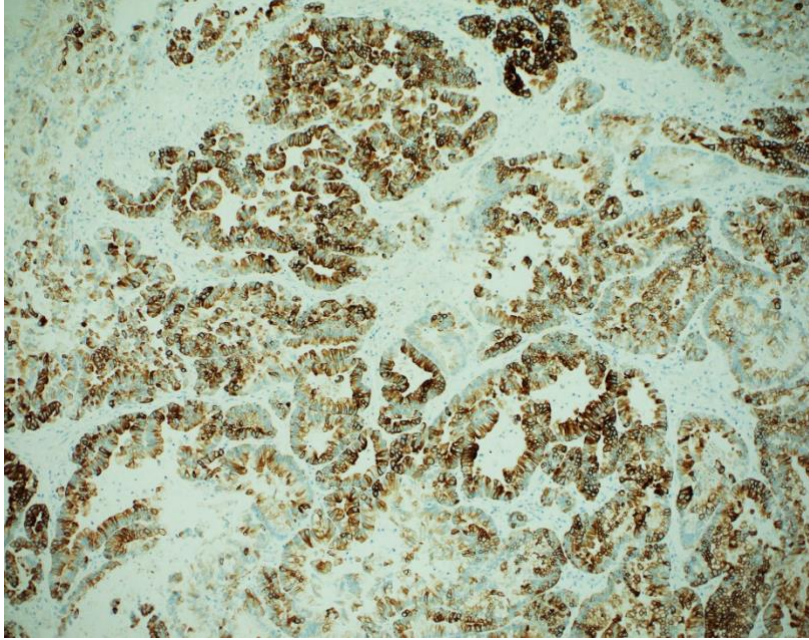


Figure 7: Tumor cells highlighted by CK-7 (CK7, 200X)

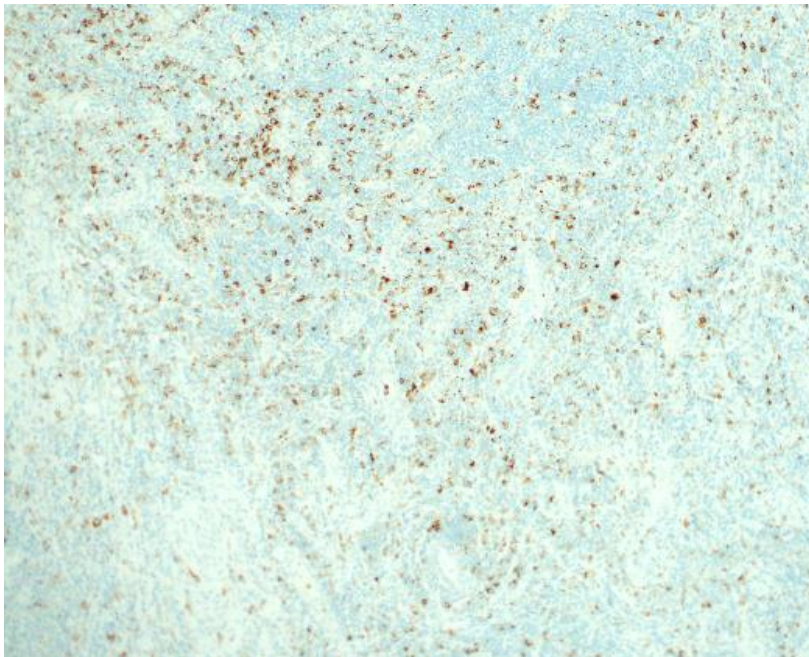


Figure 8: Osteoclast-like giant cells highlighted by CD68 (CD68, 200X)

Additional Immunostains:

Rare scattered reactivity for CDX-2

Non-reactive for Synaptophysin and Chromogranin

Diagnosis

Poorly differentiated adenocarcinoma (5.5 cm) of the stomach (involving the gastroesophageal junction and extending into the esophagus), invasive into muscularis propria with massive metastasis to liver - AJCC (8th ed) stage: pT2 N2 M1.

Discussion

The World Health Organization (WHO) classification of gastric adenocarcinoma includes four histological types: tubular, papillary, mucinous, and signet ring cell. The Japanese classification system categorizes gastric adenocarcinoma into differentiated and undifferentiated. Poorly differentiated gastric adenocarcinoma have the worst prognosis and is associated with lymph node metastasis along with distant metastasis. There is a high mortality risk for stage 3 metastatic gastric cancer, with a five-year survival rate of only 3.1% with a median survival of 4 months. Meta-analysis have revealed that adverse prognostic factors include advanced age, cardiac location, and lack of treatment. Co-morbidities also contributed to higher mortality. The decedent had many of these adverse prognostic factors including lack of treatment, cardiac location, co-morbidities of cardiovascular disease, and advanced age. Additionally the massive replacement of liver by metastasis with hepatic insufficiency contributed to the decedent's morbidity and cause of death.

References

Lee HH, Song KY, Park CH, Jeon HM. Undifferentiated-type gastric adenocarcinoma: prognostic impact of three histological types. *World J Surg Oncol*. 2012;10:254. Published 2012 Nov 26. doi:10.1186/1477-7819-10-254.