A 72-year-old male with history of multiple cardiopulmonary diseases and now concern for bladder mass with associated hematuria for the past 3 weeks

Contributed by Dr. Renuka Pathi
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More IHC studies

- The neoplastic cells are also positive for pancytokeratin, CD56, chromogranin, synaptophysin, ki-67(100%), focal weak positive for TTF-1;
- They are negative for NKX-3.1, GATA3 (is positive in urothelial mucosa), and CK20 (focally positive in carcinoma in-situ and negative in neuroendocrine tumor).
Diagnosis

TUMOR, LEFT LATERAL BLADDER WALL, TURBT:
- MIXED NEUROENDOCRINE/NON-NEUROENDOCRINE CARCINOMA COMPOSED OF LARGE CELL NEUROENDOCRINE CARCINOMA AND ATLEAST UROTHELIAL CARCINOMA IN-SITU
- NEUROENDOCRINE CARCINOMA INVADES INTO THE LAMINA PROPRIA
- NO MUSCLE PRESENT FOR EVALUATION
Discussion

• The patient is a 72-year-old male with CHF, CAD (s/p CABG ), COPD, CVA, HTN, and osteoarthritis with subacute on chronic hematuria. CT showed 7.8 x 6.1 x 5.1 cm irregular relatively high-density mass within the urinary bladder.

• Large cell neuroendocrine carcinomas of the urinary bladder are rare and usually coexist with urothelial carcinoma in elderly patients as seen in our patient. The specimen shows High grade neuroendocrine carcinoma with predominantly solid growth pattern with large cell size, low nuclear to cytoplasmic ratio, vesicular/fine chromatin, frequent nucleoli and frequent mitosis: >3 per 10 high power field.

• **Definition:** This is an extremely rare, high grade neuroendocrine carcinoma. According to the current WHO criteria, would fit into the category of Neuroendocrine carcinoma, NOS.
• **Epidemiology:** Equal gender distribution; peak age of incidence for neuroendocrine tumors is between the fifth and sixth decades

• **Pathophysiology:** It is thought that neuroendocrine tumors arise from pluripotent primitive stem cells capable of neuroendocrine differentiation

• **Clinical features:** Often present with locally advanced disease, flank pain, flank mass, hydronephrosis, and hematuria. May have distant metastases with associated symptoms.

• **Prognostic factors:** Poor prognosis despite treatment; 75% dead of disease within 1 year.

• **Grossly,** it often presents as a large (median 8 cm) irregular solid or lobulated, firm, grayish tan tumor. Often necrotic and extends into renal sinus and perirenal tissues.
• **Microscopically**, it is characterized as a high-grade carcinoma with non-small cell features such as large cell size, low nuclear to cytoplasmic ratio, vesicular/fine chromatin or frequent nucleoli. Neuroendocrine growth patterns, such as organoid nesting, palisading, rosettes, trabeculae or solid growth pattern, are seen. Frequent mitosis, >3 per 10 high power fields, usually >10 per high power fields. Frequent necrosis and vascular emboli.

• **Treatment:** Many are currently treated with radical surgical resection and platinum-based chemotherapy similar as lung large cell neuroendocrine carcinoma (LCNEC). Due to rarity, no standard treatment has been approved for locally advanced disease or metastasis.