The Spectrum of Neuroendocrine Neoplasms of the Urinary Bladder

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Case: 65 year old man, presented with hematuria, 3 cm bladder mass
Your Diagnosis? Urothelial Carcinoma?

GATA3 Positive
Bladder Paraganglioma

- p63
- Synaptophysin
Neuroendocrine Tumors (WHO 2016)

- Small cell carcinoma
- Large cell NE carcinoma
- Carcinoid
- Paraganglioma
Bladder Paraganglioma
Bladder Paraganglioma
Bladder Paraganglioma
S100 Highlights Sustentacular Cells
Paraganglioma of the Urinary Bladder

Can Biologic Potential Be Predicted?

Cheng et al CANCER 88:844

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BACKGROUND. Paraganglioma of the urinary bladder is rarely encountered and its biologic behavior is uncertain. The authors sought to determine the prognostic factors that would predict patient outcome.
Neuroendocrine Tumors (WHO 2016)

• Small cell carcinoma
• Large cell NE carcinoma
• Carcinoid
• Paraganglioma
OUTCOME of BLADDER SMALL CELL CARCINOMA

Small Cell Carcinoma of the Urinary Bladder

A Clinicopathologic Analysis of 64 Patients


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BACKGROUND. Small cell carcinoma of the urinary bladder is an uncommon tumor that has been described in case reports or small series. Herein, the authors report a series of 64 patients with small cell carcinoma of the urinary bladder.

METHODS. Histologic slides and medical records from 64 patients with small cell carcinoma of the urinary bladder were reviewed for morphologic, demographic,
Understanding the Genetic Landscape of Small Cell Carcinoma of the Urinary Bladder and Implications for Diagnosis, Prognosis, and Treatment

A Review

Kouba & Cheng JAMA Oncol 2017

Erik J. Kourba, MD; Liang Cheng, MD
Small Cell Carcinoma of Lung Metastasis?

TTF1
Thyroid transcription factor 1 expression in small cell carcinoma of the urinary bladder: an immunohistochemical profile of 44 cases

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How to distinguish small cell carcinoma of bladder from prostatic small cell carcinoma?
TMPRSS2:ERG Gene Fusion is Specific for Prostate Cancer

Wild type chromosome 21q

- RP11-476D17 (3' ERG)
- RP11-95I21 (5' ERG)
- RP11-35C4 (TMPRSS2)

Wild type

Chromosome 21q with ERG rearrangement

- RP11-476D17 (3' ERG)
- RP11-35C4 (TMPRSS2)
- RP11-95I21 (5' ERG)

Rearrangement
**ERG–TMPRSS2** rearrangement is shared by concurrent prostatic adenocarcinoma and prostatic small cell carcinoma and absent in small cell carcinoma of the urinary bladder: evidence supporting monoclonal origin

Sean R Williamson¹, Shaobo Zhang¹, Jorge L Yao², Jiaoti Huang³, Antonio Lopez-Beltran⁴, Steven Shen⁵, Adeboye O Osunkoya⁶, Gregory T MacLennan⁷, Rodolfo Montironi⁸ and Liang Cheng¹,⁹
Small-cell Carcinomas of the Urinary Bladder and Prostate: TERT Promoter Mutation Status Differentiates Sites of Malignancy and Provides Evidence of Common Clonality Between Small-cell Carcinoma of the Urinary Bladder and Urothelial Carcinoma

David S. Priemer, Mingsheng Wang, Shaobo Zhang, Antonio Lopez-Beltran, Erik Kouba, Rodolfo Montironi, Darrell D. Davidson, Gregory T. MacLennan, Lisha Wang, Adeboye O. Osunkoya, Youping Deng, Robert E. Emerson, Liang Cheng
Small Cell Carcinoma of the Bladder
Small Cell Carcinoma of the Bladder
Small Cell Carcinoma of the Bladder with Overlying CIS
Question
Are small cell carcinomas clonally related to urothelial carcinoma?
Microdissection

Before

After

UC

SCC
X-Chromosome Inactivation Analysis

LOH Analysis

N: normal
UC: urothelial component
SCC: small cell component
Concordant genetic alterations between small cell carcinoma and coexisting urothelial carcinoma as well as X-chromosome inactivation analysis data suggest that both urothelial and small cell carcinoma components originate from the same stem cells in the urothelium.
Small-Cell Carcinomas of the Bladder and Lung Are Characterized by a Convergent but Distinct Pathogenesis
Molecular Characterization of Neuroendocrine-like Bladder Cancer
Neuronal subtype UC is highly responsive to IO

The Cancer Genome Atlas Expression Subtypes Stratify Response to Checkpoint Inhibition in Advanced Urothelial Cancer and Identify a Subset of Patients with High Survival Probability

Kim et al. Eur Urol 2019
Thank You!