



# Retention attention: small cell prostate cancer presenting with SIADH and urinary retention

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## Introduction

- The syndrome of inappropriate antidiuretic hormone (SIADH) is associated with multiple etiologies including central nervous system (CNS) disorders, pulmonary diseases, and malignancies.
- This case of SIADH secondary to small cell prostate carcinoma (SCPC) highlights a rare cause of SIADH and reminds us to consider a broad SIADH differential.

## Case Presentation

- A 75-year-old male with metastatic castrate-sensitive prostate cancer on androgen deprivation therapy (ADT) presents with weakness and urinary retention.
- Several months before admission, he self-stopped ADT due to fatigue but was restarted due to rising prostate specific antigen (PSA). His PSA decreased from 9.1 to 0.6, consistent with ADT response.
- He was found to have hyponatremia upon admission, and was diagnosed with SIADH on the basis of the following:

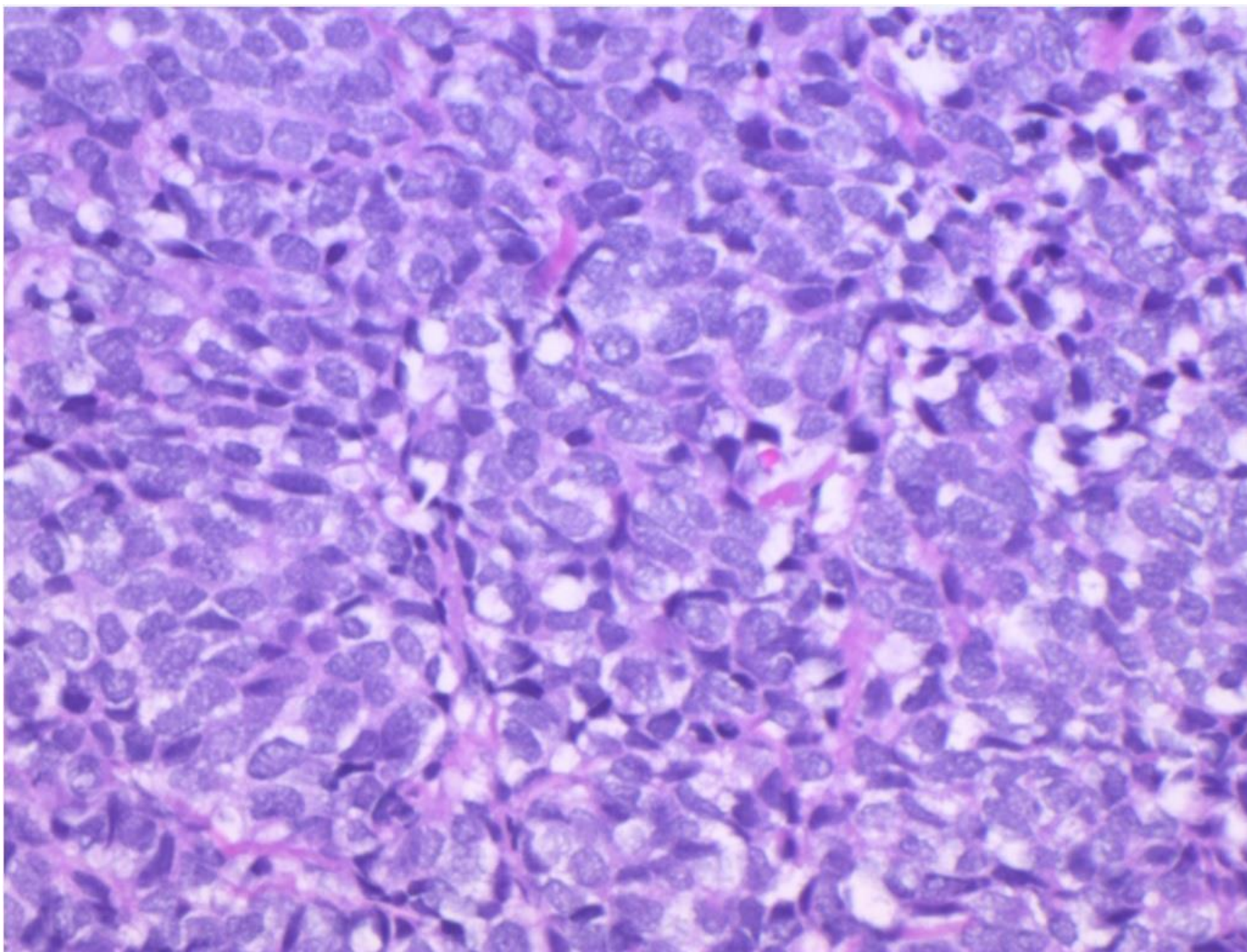
Essential SIADH Diagnostic Criteria	Our Patient
Hyponatremia (serum sodium <135 mmol/L)	111 mmol/L
Decreased serum osmolality (<275 mOsm/kg)	243 mOsm/kg
Urine osmolality >100 mOsm/kg	692 mOsm/kg
Clinical euvolemia	Euvolemic
Urine sodium >40 mmol/L	Urine sodum 151 mmol/L
Normal thyroid, adrenal function	TSH, cosyntropin normal

- Chest x-ray and non-contrasted CT chest were normal. SIADH was attributed to recent viral illness. Follow-up for urinary retention was arranged with Urology.
- Two months later he underwent transurethral resection of the prostate. Path results showed known prostatic adenocarcinoma and new concurrent SCPC. CT abdomen/pelvis demonstrated metastatic disease to the liver.

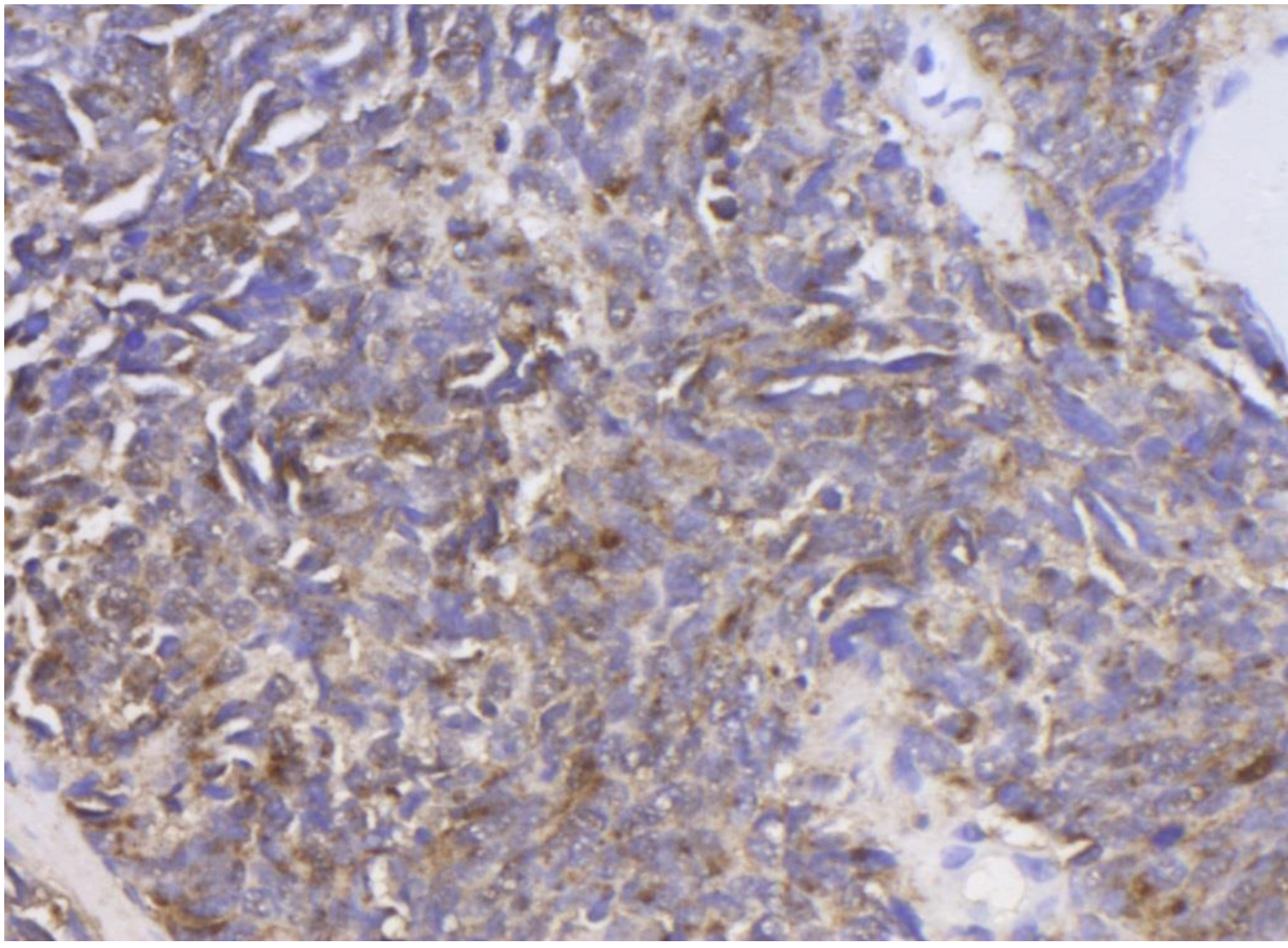
## Etiologies of SIADH

Malignant	Pulmonary	CNS	Drugs	Other
Lung carcinoma including small-cell and mesothelioma	Infections including bacterial and viral pneumonia, pulmonary abscess, and tuberculosis	Infections including encephalitis, meningitis, brain abscess, and AIDS	Anti-diuretic hormone (vasopressin) analogues including desmopressin and oxytocin	Hereditary vasopressin receptor mutations
Gastrointestinal carcinoma of the stomach, duodenum, and pancreases	Respiratory failure associated with positive pressure ventilation	Bleeding and masses including subdural hematoma, subarachnoid hemorrhage, tumors	Drugs that stimulate vasopressin release or action including chlorpropamide, SSRIs, nicotine	General anesthesia
Genitourinary carcinoma of the ureter, bladder, and prostate	Cystic Fibrosis	Guillian-Barre Syndrome		Endurance exercise
Carcinoma of the oropharynx	Asthma	Multiple Sclerosis		Pain
Lymphomas		Delirium Tremens		Stress
Sarcomas				Idiopathic

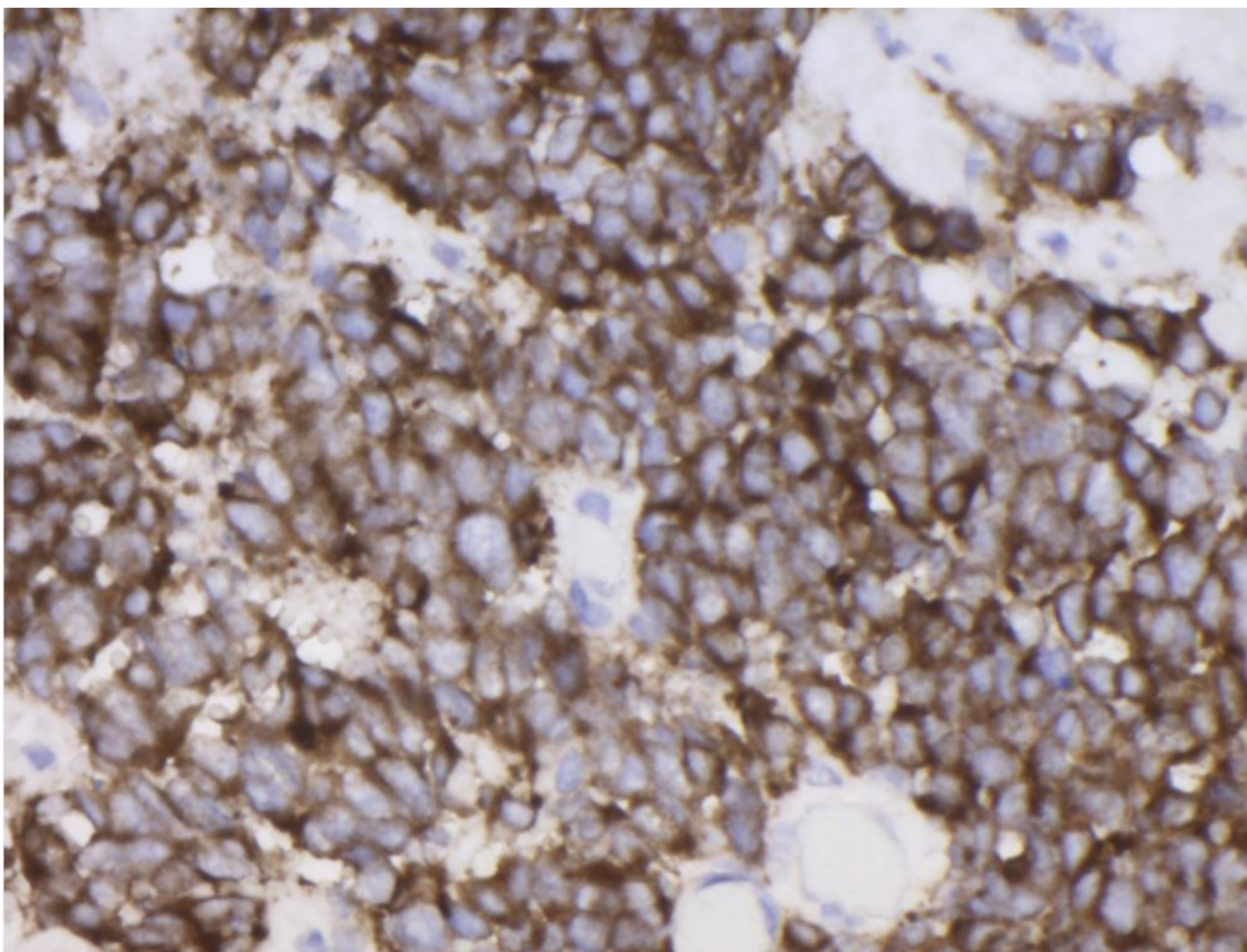
## Histologic Findings



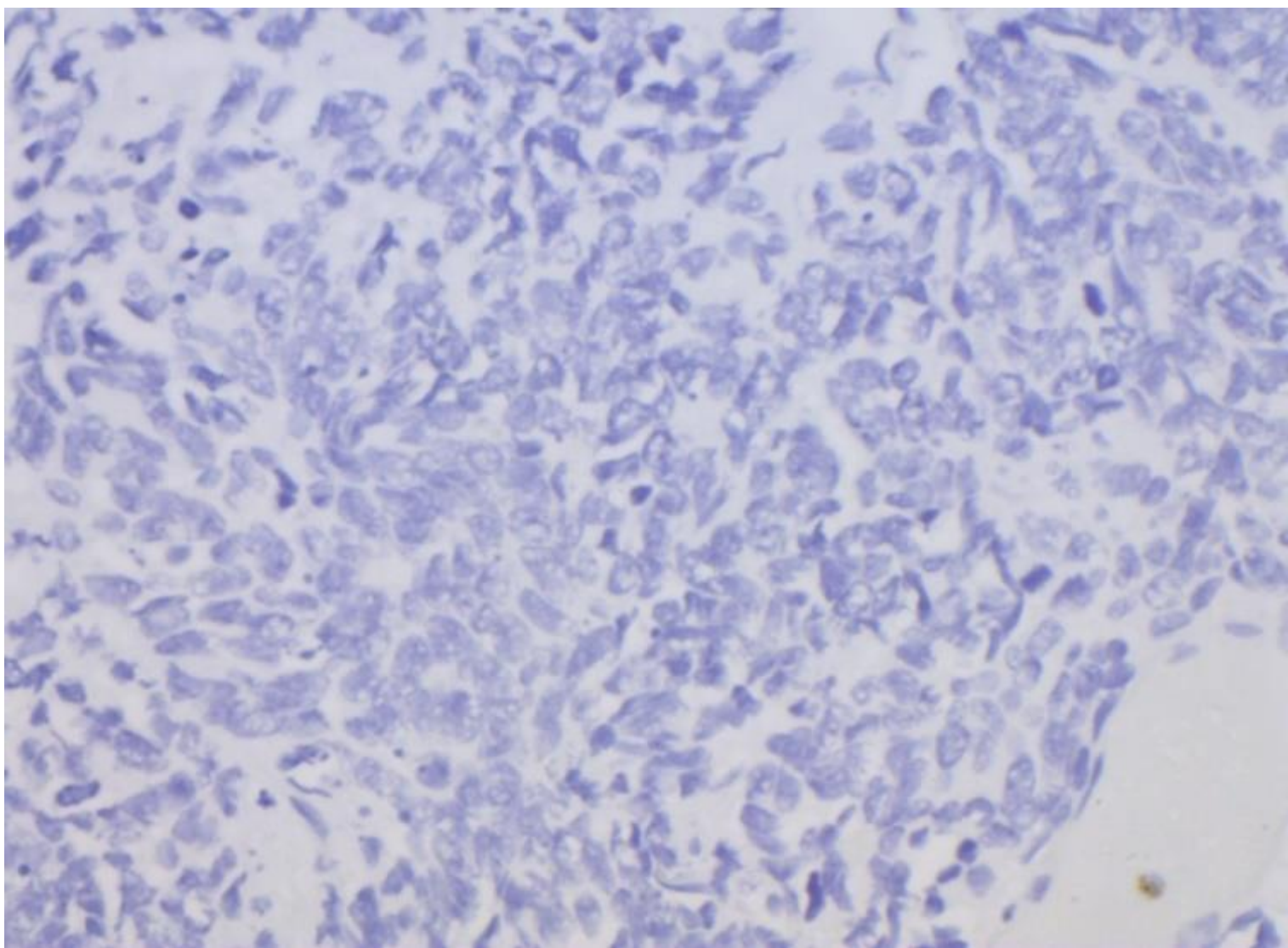
Classic small cell neuroendocrine carcinoma morphology characterized by sheets and nests of small round blue cells with scant cytoplasm and nuclei with a finely stippled chromatin pattern. There is focal nuclear molding, crush artifact, and scattered apoptotic bodies.



Small cell neuroendocrine carcinoma positive for chromogranin, a neuroendocrine tumor marker.



Small cell neuroendocrine carcinoma positive for synaptophysin, a neuroendocrine tumor marker.



Small cell neuroendocrine prostate carcinoma negative for the prostatic markers (PSA and PSAP).

## Discussion

- SCPC classically presents with a precipitously enlarging prostate resulting in bladder outlet obstruction and little or no rise in PSA.
- Unlike adenocarcinoma of the prostate, SCPC frequently metastasizes to visceral organs.
- SCPC is a rare entity, accounting for 1-2% of all prostate cancers.
- 40-50% of men with SCPC have a history of conventional prostatic adenocarcinoma.
- An aggressive cancer, SCPC presents with metastatic disease in 60% of patients.
- SIADH is classically associated with small cell carcinoma of the lungs but may be associated with any small cell neuroendocrine tumor and with other malignancies.
- SIADH has a broad differential but no guidelines exist for recommended work up of the syndrome.

## Teaching Points

- This case highlights a rare cause of SIADH.
- Small cell prostate cancer (SCPC), an aggressive tumor, classically presents with bladder outlet obstruction and little or no rise in PSA.
- SIADH has a broad differential containing numerous malignancies including SCPC.

## References

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