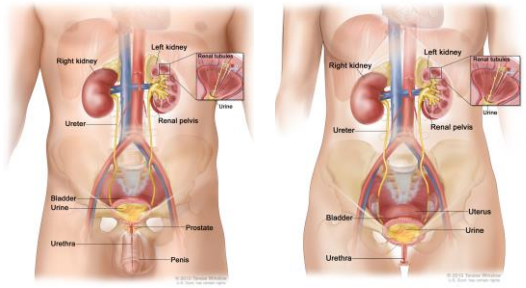
Puget Sound Oncology Nursing Education Cooperative GENITOURINARY CANCERS

Jim Drechsler PA-C
Seattle Cancer Care Alliance
University of Washington

Genitourinary System



Renal Cell Carcinoma

- Divided into cancers of the renal parenchyma and cancer of the renal pelvis.
- Renal parenchymal cancers are generally adenocarcinomas.
  - 4 histologic subtypes:
    - Clear cell – most common – 80%
    - Papillary or chromophilic – 10%
    - Chromophobic and collecting duct – 10%

Renal Cell Carcinoma

- Renal Pelvis Cancers
  - Transitional Cell tumors

Renal Cell Carcinoma

- Epidemiology
  - Estimated 63,920 new cases in 2014
  - Estimated 13,860 deaths in 2014
  - 5 year survival 72.4%
- More common in men
- Slightly more common in blacks

Renal Cell Carcinoma

- Risk Factors
  - Age – major risk factor
    - Presents in 6-8th decade of life
  - Cigarette smoking
  - Obesity
  - Polycystic Kidney Disease
  - Occupational Exposure
    - Heavy metals
    - Asbetos
    - Petroleum Products

Renal Cell Carcinoma

- Risk Factors
  - Hereditary forms
    - Von Hipple-Lindau syndrome – 2/3^{rds} develop renal cell carcinoma
    - Familial Clear Cell Renal Cancer
    - Hereditary paraganglioma
    - Hereditary papillary renal carcinoma
    - Birt-Hogg-Dube
    - Hereditary leiomyomatosis
    - Renal Cell Cancer

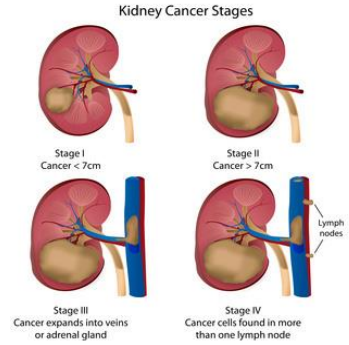
Renal Cell Carcinoma

- Clinical Presentation
  - Majority are asymptomatic at time of diagnosis
  - **Classic Triad** (seen in less than 10% of patients)
    - **Hematuria**
    - **Pain (abdominal)**
    - **Palpable Flank Mass**
  - Hematuria is the most common finding
  - Other symptoms include fever, night sweats, malaise, and weight loss.

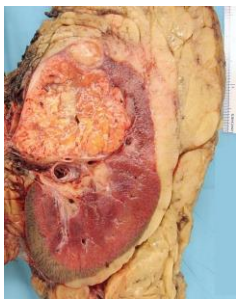
Renal Cell Carcinoma

- Work-up
  - Urinalysis
  - Renal Ultrasound
  - CT with IVP
  - MR
  - Biopsy

Renal Cell Carcinoma



Renal Cell Carcinoma



Renal Cell Carcinoma

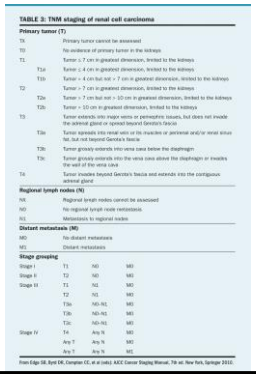


TABLE 3: TNM staging of renal cell carcinoma

Primary tumor (T)			
TX	Primary tumor cannot be assessed		
T0	No evidence of primary tumor in the kidneys		
T1	Tumor ≤ 7 cm in greatest dimension, limited to the kidneys		
	T1a	Tumor ≤ 4 cm in greatest dimension, limited to the kidneys	
	T1b	Tumor > 4 cm but not > 7 cm in greatest dimension, limited to the kidneys	
T2	Tumor > 7 cm in greatest dimension, limited to the kidneys		
	T2a	Tumor > 7 cm but not > 10 cm in greatest dimension, limited to the kidneys	
	T2b	Tumor > 10 cm in greatest dimension, limited to the kidneys	
T3	Tumor extends into major veins or perinephric tissues, but does not invade the ipsilateral adrenal gland or spread beyond Gerota's fascia		
	T3a	Tumor spreads into renal vein or its muscles or perirenal and/or renal sinus fat, but not beyond Gerota's fascia	
	T3b	Tumor grossly extends into vena cava below the diaphragm	
	T3c	Tumor grossly extends into the vena cava above the diaphragm or invades the wall of the vena cava	
T4	Tumor invades beyond Gerota's fascia and extends into the contiguous adrenal gland		
Regional lymph nodes (N)			
NX	Regional lymph nodes cannot be assessed		
N0	No regional lymph node metastasis		
N1	Metastasis to regional nodes		
Distant metastasis (M)			
M0	No distant metastasis		
M1	Distant metastasis		
Stage grouping			
Stage I	T1	N0	M0
Stage II	T2	N0	M0
Stage III	T1	N1	M0
	T2	N1	M0
	T3a	N0–N1	M0
	T3b	N0–N1	M0
	T3c	N0–N1	M0
Stage IV	T4	Any N	M0
	Any T	Any N	M0
	Any T	Any N	M1

From Edge SB, Byrd DR, Compton CC, et al (eds): AJCC Cancer Staging Manual, 7th ed. New York, Springer 2010.

Renal Cell Carcinoma

- Estimated 73% cure rate if tumor is confined to kidney and surrounding tissue and surgically resected.
- Stage 4 disease has very poor prognosis.

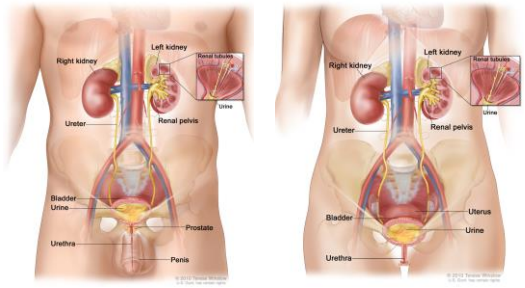
Renal Cell Carcinoma

- Treatment
  - Localized disease
    - Surgery
  - Metastatic disease
    - Surgery
    - Immunotherapy
    - Targeted Therapy
      - VEGF
      - mTOR

Renal Cell Carcinoma

- Side Effect Management
  - Depends on type of therapy
    - Generally Supportive
    - May include dose holds, dose reduction, usually combination of both.
    - VEGF – Hand/Foot Skin Reaction
      - Moisturize!
    - VEGF - HTN
      - Antihypertensive

Genitourinary System



Bladder Cancer

- Malignancy of epithelium
  - Urothelia Carcinoma (transitional cell carcinoma)
  - Accounts for >97% of tumors
    - Subtypes include squamous cell carcinoma, adenocarcinoma, and small cell.
  - A field defect
    - from renal pelvis to urethra

Bladder Cancer

- Epidemiology
  - Prevalence is 3x higher in men than women
  - Usually presents in 5th and 6th decade
  - Estimated 74,690 diagnoses made in 2014
  - Estimated 15,580 deaths in 2014
  - 5 year survival 77.4%

Bladder Cancer

- Risk Factors
  - Smoking (twice as likely than a nonsmoker)
  - Gender (male)
  - Occupational Exposure
    - Aromatic amines in the dye industry
    - Rubber, leather, textile, paint, printing, and hairdressing industries
    - Squamous cell carcinoma subtype prevalent in endemic for schistosoma haematobium (uncommon in US)

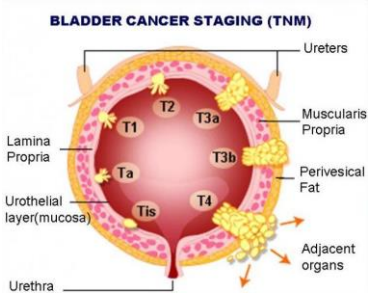
Bladder Cancer

- Clinical Presentation
  - Hematuria most common (90% of patients)
    - Can be intermittent or constant
    - Frank or microscopic
  - Urinary symptoms
    - Frequency
    - Urgency
    - Dysuria
  - Unexplained hematuria in an adult >40 is renal cell or urothelial cell carcinoma until proven otherwise.
  - May also have constitutional symptoms
    - Night sweats, weight loss, anorexia, fatigue, pain

Bladder Cancer

- Work-up
  - Urinalysis
  - Urine cytology
  - Cystoscopy
    - Biopsy
  - CT with IVP
  - MR

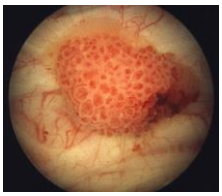
Bladder Cancer

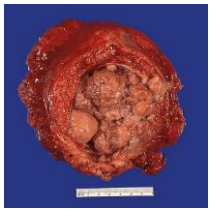


Bladder Cancer

2002 TNM classification of urinary bladder cancer	
T- Primary tumour	
TX	Primary tumour cannot be assessed
T0	No evidence of primary tumour
Ta	Non-invasive papillary carcinoma
Tis	Carcinoma in situ (flat tumour)
T1	Tumour invades subepithelial connective tissue
T2	Tumour invades muscle
T2a	Tumour invades superficial muscle (inner half)
T2b	Tumour invades deep muscle (outer half)
T3	Tumour invades perivesical tissue
T3a	Microscopically
T3b	Macroscopically (extravesical mass)
T4	Tumour invades any of the following: prostate, uterus, vagina, pelvic wall, abdominal wall
T4a	Tumour invades prostate, uterus or vagina
T4b	Tumour invades pelvic wall or abdominal wall
N- Lymph Nodes	
NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis in a single lymph nose 2 cm or less in greatest dimension
N2	Metastasis in a single lymph nose more that 2 cm but not more than 5 cm in greatest dimension, or multiple lymph nodes, none more that 5cm in greatest dimension.
N3	Metastasis in a lymph node more than 5 cm in greatest dimension
M- Distant metastasis	
MX	Distant metastasis cannot be assessed
M0	No Distant metastasis
M1	Distant metastasis

Bladder Cancer





Bladder Cancer

- 3 categories from which treatment is based
  - Superficial
  - Muscle Invasive
  - Metastatic

Bladder Cancer

- Superficial Urothelial Carcinoma
  - Treatment
    - Transurethral Resection of bladder tumor (TURBT)
      - Most will have recurrence within 5 years
      - BCG (Bacillus Calmette-Guerin) intravesicle therapy is most common
      - Other agents include mitomycin, interferon, and anthracyclins
      - None show superiority to BCG

Bladder Cancer

- Muscle Invasive Urothelial Carcinoma
  - Treatment
    - Radical cystectomy with pelvic lymph node dissection
    - Males undergo removal of prostate and seminal vesicles at time of cystectomy
    - Females undergo removal of uterus, ovaries, and fallopian tubes at time of cystectomy
    - Neoadjuvant chemotherapy (prior to cystectomy) has shown to improve outcomes
      - MVAC (methotrexate, vinblastine, doxorubicin, cisplatin)
      - Cisplatin based regimen such as Cisplatin plus Gemcitabine

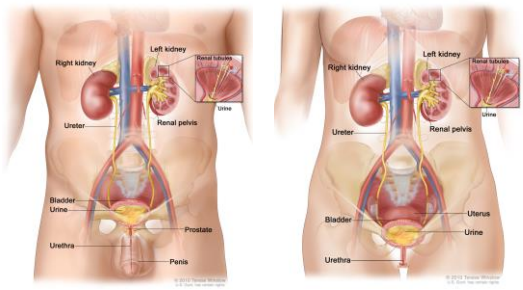
Bladder Cancer

- Metastatic Disease
  - Confers poor prognosis, median survival is 12 months
  - Cisplatin based combination therapy is the treatment of choice
  - Radiation used for palliation

Bladder Cancer

- Side Effect Management
  - Management of pain
  - Management of urinary symptoms
  - Management of any bleeding
  - Management of chemotherapy induced side effects
    - Neuropathy
    - Neutropenia
    - Thrombocytopenia
    - Rash
    - Fatigue
    - Nausea/Vomiting
    - Diarrhea/Constipation
    - Fatigue
      - Just to name a few

Genitourinary System



Prostate Cancer

- Most common non-cutaneous cancer in men in United States
- Second leading cause of cancer deaths in men after lung cancer
- Often indolent
- Adenocarcinoma most common >95%
  - Squamous cell subtype
  - Transitional cell subtype
  - Small cell subtype

Prostate Cancer

- Epidemiology
  - Estimated 233,000 diagnoses in 2014
  - Estimated 29,480 deaths in 2014
  - 5 year survival 98.9%

Prostate Cancer

- Risk Factors
  - Age
    - 2 of every 3 diagnoses found in men older than 65
  - Positive Family History
  - **African American Descent**
  - High fat and red meat diets
  - Some research to suggest obesity
  - BPH is NOT a risk factor

Prostate Cancer

- Screening
  - There has been much controversy over PSA screening
  - USPSTF recommends against screening in men older than 75 and conclude insufficient data to recommend for or against screening in younger men
  - AUA continues to recommend screening starting at the age of 40
  - It's a discussion between the patient and his primary care provider.

Prostate Cancer

- Clinical Presentation
  - Often asymptomatic and found incidentally
  - May have urinary symptoms including frequency, hesitancy, decrease in stream, incomplete bladder emptying
  - Low back pain
  - Hematuria

Prostate Cancer

- It is not one size fits all
  - There are slow moving prostate cancers (turtles)
  - There are moderate moving prostate cancers (rabbits)
  - There are fast moving prostate cancers (birds)

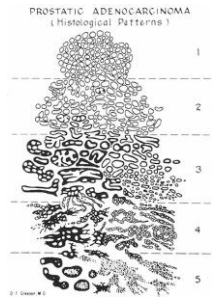
Prostate Cancer

- Work-up
  - Physical Exam
    - DRE
  - PSA
    - <4 ng/ml
  - Transrectal ultrasound and biopsy
  - CT Scan
  - Bone Scan
  - MR

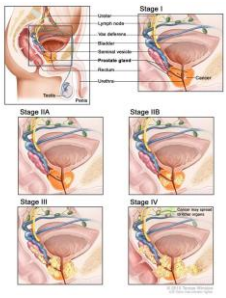
Prostate Cancer

- Biopsy is essential for diagnosis
  - GLEASON
    - Given 2 scores
      - 1-5 each score
      - Both scores are added and the sum gives you the Gleason Score

Prostate Cancer



Prostate Cancer



Prostate Cancer

Prostate Cancer

TABLE 2: TNM staging system of prostate cancer, 2010 updates[a]

Anatomic Stage/Prognostic Groups

GROUP	T	N	M	PSA	Gleason
Stage I	T1a–c	N0	M0	PSA < 10	Gleason ≤ 6
	T2a	N0	M0	PSA < 10	Gleason ≤ 6
	T1–2a	N0	M0	PSA X	Gleason X
Stage IIA	T1a–c	N0	M0	PSA < 20	Gleason 7
	T1a–c	N0	M0	PSA ≥ 10 < 20	Gleason ≤ 6
	T2a	N0	M0	PSA < 20	Gleason ≤ 7
	T2b	N0	M0	PSA < 20	Gleason ≤ 7
	T2b	N0	M0	PSA X	Gleason X
Stage IIB	T2c	N0	M0	Any PSA	Any Gleason
	T1–2	N0	M0	PSA ≥ 20	Any Gleason
	T1–2	N0	M0	Any PSA	Gleason ≥ 8
Stage III	T3a–b	N0	M0	Any PSA	Any Gleason
Stage IV	T4	N0	M0	Any PSA	Any Gleason
	Any T	N1	M0	Any PSA	Any Gleason
	Any T	Any N	M1	Any PSA	Any Gleason

From Edge SB, Byrd DR, Compton CC, et al (eds): AJCC Cancer Staging Manual, 7th ed. New York, Springer, 2010.
[a]When either PSA or Gleason is not available, grouping should be determined by T stage and/or either PSA or Gleason as available.

Prostate Cancer

TABLE 3: D'Amico et al risk stratification for clinically localized prostate cancer

Low risk	Diagnostic PSA < 10.0 ng/mL *and* highest biopsy Gleason score ≤ 6 *and* clinical stage T1c or T2a
Intermediate risk	Diagnostic PSA ≥ 10 but < 20 ng/mL *or* highest biopsy Gleason score = 7 *or* clinical stage T2b
High risk	Diagnostic PSA ≥ 20 ng/mL *or* highest biopsy Gleason score ≥ 8 *or* clinical stage T2c/T3

PSA = prostate-specific antigen

Prostate Cancer

- Treatment based upon stage
  - Localized Disease (confined to prostate)
    - Low Risk
      - Prostatectomy, EBRT, Brachytherapy
    - Intermediate Risk
      - Prostatectomy, EBRT, Brachytherapy
    - High Risk
      - Prostatectomy with pelvic lymph node dissection or EBRT with 2-3 year of androgen deprivation therapy

Prostate Cancer

- Treatment based upon stage
  - Locally advanced disease
    - Prostatectomy with pelvic lymph node dissection or EBRT with 2-3 years androgen deprivation therapy
  - Metastatic Disease
    - Surgery is usually not an option
    - Androgen Deprivation Therapy
    - Secondary Hormonal Manipulation
    - Chemotherapy
    - Novel Agents
      - Immune therapy
      - Bone targeted agents

Prostate Cancer

Drug	Mechanism of Action	Clinical Trial	Clinical Setting	Main Study Results	FDA Approval
Docetaxel	Binds and stabilizes tubulin	TAX327[1] Docetaxel vs. mitoxantrone	mCRCP	Improved OS 18.9 vs. 16.5 months (HR 0.76; 95% CI: 0.62-0.94) L	2004
		SWOG 9916[2] Docetaxel/estramustine vs. mitoxantrone	mCRPC	Improved OS 17.5 vs 15.6 months (HR 0.8; 95% CI: 0.67-0.97)	
Cabazitaxel	Binds and stabilizes tubulin	TROPIC[3] (755 patients) Cabazitaxel vs. mitoxantrone	mCRPC— post-docetaxel	Improved OS 15.1 months vs. 12.7 months (HR 0.70; 95% CI: 0.59-0.83)	2010
Sipuleucel-T	Immunotherapy; dendritic vaccine	IMPACT[4] (512 patients) Sipuleucel vs. placebo	mCRPC—symptomatic or minimally symptomatic	Improved OS 25.8 vs. 21.7 months (HR 0.78; 95% CI: 0.61-0.98)	2010
Abiraterone	CYP-17A inhibitor	COU-AA-301[5] (1,195 patients) Abiraterone/prednisone vs. placebo/prednisone	mCRPC—post-docetaxel	Improved OS 15.8 vs. 11.2 months HR: 0.74; 95% CI: 0.64-0.86)	2011
		COU-AA-302[6] (1,088 patients) Abiraterone/prednisone vs. placebo/prednisone	mCRPC— chemotherapy-naive	Improved PFS 16.5 vs. 8.3 months HR: 0.53; 95% CI: (0.45-0.62)	2012
Enzalutamide	Androgen receptor blocker	AFFIRM[7] (1,199 patients) Enzalutamide vs. placebo	mCRPC—post-docetaxel	Improved OS 18.4 vs. 13.6 months HR: 0.63; 95% CI: 0.53-0.75)	2012
		PREVAIL[8] NCT01212991 (Approximately 1,680 patients) Enzalutamide vs. placebo	mCRPC— chemotherapy-naive	Pending	
Xofigo (radium-223)	Radio-pharmaceutical, alpha-emitter, and calcium mimetic	ALSYMPCA[9] (921 patients) Placebo-controlled	mCRPC—patients ineligible for docetaxel or post-docetaxelwith symptomatic bone metastases only	Improved OS 14.0 vs. 11.2 months (HR 0.70; 95% CI: 0.55-0.89)	2013

Prostate Cancer

- Symptom Management
  - Disease
    - Pain
    - Fracture
    - Urinary symptoms
    - Pancytopenia
    - Anorexia
  - Disease Related Emergencies
    - Spinal Cord Compression
    - Hypercalcemia
    - PE/DVT

Prostate Cancer

- Symptom Management
  - Androgen Deprivation Therapy
    - Vasomotor Flushing (Hot flashes/flushes)
    - Fatigue
    - Loss of libido
    - Erectile Dysfunction
    - Loss of lean muscle mass/increased body fat
    - Gynecomastia
    - Joint Aches
    - Cognitive Clouding
    - Loss of bone mineral density

Prostate Cancer

- Symptom Management
  - Secondary Hormonal Manipulation
    - Fatigue
    - ED
    - Loss of Libido
    - Weight Gain

Prostate Cancer

- Symptom Management
  - Chemotherapy
    - Fatigue
    - Neutropenia
    - Thrombocytopenia
    - Anemia
    - Nausea/Vomiting
    - Diarrhea/Constipation

THE END ☺

- Questions?