

## BACKGROUND

### Risk factors for prostate cancer

- Age > 70
- Race / Ethnicity
  - Caucasian and African Americans at greatest risk
- High fat diet increases risk by 1.5 to 3.0 times
- Risk increases 2.5 times when close relatives are affected

### Signs & Symptoms of BPH, Prostate CA?

Pain	Urinary	Sexual	Others
Suprapubic	Decrease in force	Erectile dysfunction	Joint Pain
Urination	Sensation of incomplete urination	Decrease in force and volume in ejaculation	Recurring urinary tract infection
Testicle	Frequency	Bloody ejaculate	Recurring urethral discharge
Perineum	Inability to control urination	Infertility	Elevated PSA
Low Back			Depression

### New cases of Prostate Cancer

- 317,000 (1996)
- 180,400 (2000)
- 232,090 (2005 est.)

### Benign Prostatic Hypertrophy vs. Prostate Cancer

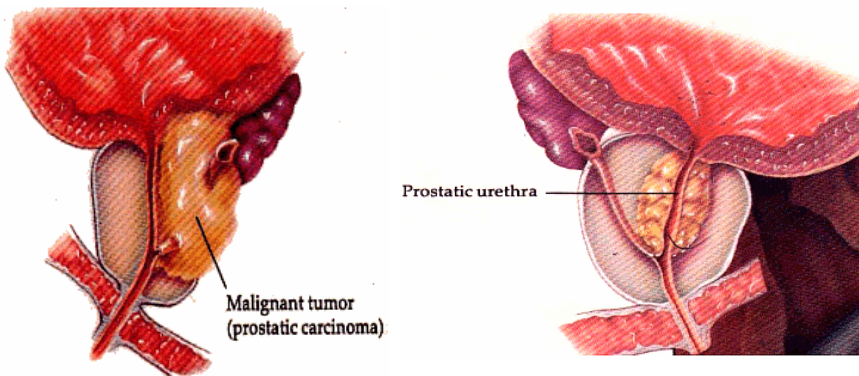
- BPH is an age related noncancerous growth of prostate cells
- BPH is much more common than prostate cancer
- Prostate cancer is an age related growth of cancerous cells that may metastasize
  - Usually a very slow growing cancer
  - Aggressiveness is age dependent
- Possible to have both BPH and cancer
- BPH does not lead to cancer
- Signs and symptoms may be similar
- Prostate specific antigen (PSA) tests may be similar
- Prostate cancer is responsive to testosterone

### Diagnosis

- The Digital Rectal Exam (DRE) or "rubber Glove Test"
  - Part of routine physical age > 50 and in high risk males
- The Prostate Specific Antigen test (PSA)
  - Annual in men > 50 years of age
- Transrectal ultrasound (TRUS) indicated when DRE is suspicious and/or PSA is high
  - Biopsy
  - CT Scans
  - Bone Scans
  - Lymphadenectomy

### Prostate cancer survival

- 10 year survival – 67%
- 15 year survival – 50%



## TREATMENT

- 1) Watchful Waiting
  - When life expectancy < 10 years
  - When cancer is small, slow growing and symptomless
- 2) Prostatectomy
  - Removal of entire prostate and adjacent lymph tissue
  - Side effects:
    - Incontinence (35% mild and 4% complete)
    - Impotence (30% age dependent)
  - Complete cure if tumor is encapsulated
- 3) Orchiectomy
  - Surgical removal of testes
  - Reduces free testosterone by 90%
- 4) Radiation
  - External Beam Radiation
    - 5 days per week for 6 weeks
  - Internal Radiation Therapy
    - Radiation pellets (iodine 125 or palladium 103) directly implanted into cancer
  - Cure rate is age dependent but comparable to surgery
  - Side effects:
    - Incontinence (8-18%)
    - Impotence (50%)
- 5) Hormone therapy
  - Strategy is to decrease/eliminate testosterone production

## Prostate Cancer Overview

- Important... therapy is palliative, not curative
- Luteinizing Hormone-Releasing Hormone Analogs
  - 90% reduction in testosterone
  - Zoladex (goserelin acetate implant)
    - Monthly SQ injection to upper abdomen or
    - Quarterly SQ injection
  - Lupron Depot (leuprolide acetate)
    - Monthly IM injection
    - Q 3 and 4 month IM injections
  - Vantus (histrelin)
    - Yearly SQ implant to upper arm area
  - Trelstar depot (triptorelin)
  - Side effects include
    - Impotence
    - Hot flashes
    - Gynecomastia
- Estrogens
  - Reduce testosterone produced by testes by suppressing LH output
  - Diethylstilbestrol (DES)
    - 3 mg/day
  - Increase risk of CVD
  - Side effects:
    - Water retention
    - Gynecomastia
    - Nausea and vomiting

## Caduceus URI College of Pharmacy

- Anti-androgens
  - Used 1-2 weeks prior to LHRH analog therapy to prevent testosterone flare
  - Neutralizes 10% of testosterone produced by adrenal gland
  - Casodex (bicalutamide)
  - Eulexin (flutamide)
  - Nilandron (nilutamide)
  - Side effects
    - Liver damage
    - N&V
    - Diarrhea
- 6) Chemotherapy
  - Prognosis is usually poor
  - Products include:
    - Doxorubicin,
    - Estramustine,
    - Etoposide,
    - Mitozantrone,
    - Vinblastine
    - Paclitaxel
  - Side effects include
    - Nausea and vomiting
    - Hair loss
    - Anemia
    - Infections

### MANAGEMENT OF TREATMENT RELATED SIDE EFFECTS

- Urinary incontinence
  - Oxybutynin
  - Tolterodine
- Erectile dysfunction
  - Viagra (Sildenafil)
  - Cialis (Tadalafil)
  - Levitra (Vardenafil)
- Osteoporosis / fracture
  - Actonel (Risedronate)
  - Aredia (Pamidronate)
  - Fosamax (Alendronate)

### CURRENT ISSUES

- Investigational therapies
  - Provenge (dendreon) 2006?
    - Stimulate body's immune response
  - Gene therapy
  - Endothelin blockers
  - Angiogenesis inhibitors
  - Zometa (zoledronic acid)
    - Bone metastasis
  - High intensity focused ultrasound
- Food and Herbal therapies
  - Lycopene
  - Selenium and vitamin E cancer prevention trial (SELECT)

### FOR MORE INFORMATION

- The American Prostate Society  
[www.ameripros.org](http://www.ameripros.org)
- CaP Cure (The Association for the Cure of Cancer of the Prostate)  
[www.capcure.org](http://www.capcure.org)
- National Association for Continence  
[www.nafc.org](http://www.nafc.org)
- National Cancer Institute (NCI)  
<http://cancernet.nci.nih.gov>
- National Prostate Cancer Coalition  
[www.pcacoalition.org/](http://www.pcacoalition.org/)
- American Cancer Society (ACS) National Office  
[www.cancer.org](http://www.cancer.org)