PROSTATE CANCER

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Created: January 2013

Overview

• Prostate cancer is the second most common cancer among Canadian men after non melanoma skin cancer\(^1\). In 2010, an estimated 24,600 men will be diagnosed with prostate cancer and 4, 300 will die of it\(^1\). The peak age of diagnosis is between 60 and 69 years\(^1\). Approximately 95% of all prostate cancers are adenocarcinomas\(^1\).

• Risk Factors:
  o A family history of prostate cancer (first degree relative with diagnosis before age 65)\(^1\)
  o African-Canadian descent\(^1\)

Diagnostic Considerations

Screening Tests:

• Men between the ages of 50-70 should be aware of prostate cancer screening and the risks/benefits should be discussed\(^4\). Digital rectal examination and Prostate Specific Antigen (PSA) are the first line screening tests and should be done together if screening is done\(^2\). There is no clear screening guideline recommendation for how often screening should occur.

1. Prostate Specific Antigen (PSA)

• The prostate epithelial cells produce a glycoprotein called prostate-specific antigen. Any disruption in the normal glandular architecture will increase PSA in the systemic circulation. An increased PSA can be seen with BPH, prostatitis, urethral instrumentation, prostate biopsy and prostate cancer. Other causes for an elevated PSA include a vigorous DRE and recent ejaculation\(^2\).

• Consider PSA testing in the following asymptomatic males\(^1\):
  o Men over 50 years of age, after risks/benefit of screening discussed; if life expectancy >10 years
  o Men with risk factors for prostate cancer

• Initially a PSA cut point of 4 ng/mL was chosen to indicate pathological elevation. More recently, the Prostate Cancer Prevention Trial (PCPT) showed that the relationship between PSA and prostate cancer incidence is continuous (i.e. the higher the PSA, the greater the risk). There is no single cut off point, regardless of age\(^2\).

  o PSA value: 0.5-4.0 ng/ml—Normal
  o PSA value 4-10 ng/ml ---20% chance of cancer
  o PSA value >10 ng/ml—50% chance of cancer

*Risk of >20%/year refer for Biopsy

2. Digital Rectal Examination (DRE)

• Not as sensitive as PSA, but may provide information about\(^1\):
  o Cancers missed by PSA
  o Help with decision making regarding referral
  o Useful in assessing size of prostate and staging cancer if present

• Findings associated with prostate cancer include induration or hard nodules\(^2\)

Management

1. Risk Stratification

• Elevated PSA and/or abnormal DRE are not diagnostic of prostate cancer; they serve to help risk stratify patients\(^3\).

• Indications for biopsies include a clinical suspicion of prostate cancer based on the PSA and DRE findings\(^3\).

• Other considerations: history, physical examination (include DRE), CBC, BUN, creatinine, ALP, liver function tests, PSA (prior to DRE), urinalysis; transrectal ultrasound, MRI scan, CXR, bone scan and other imaging tests may be ordered to help with staging\(^4\).

• Transrectal Ultrasound (TRUS)-Guided Prostate Biopsy: Results will indicate the absence/presence of carcinoma, amount of tumor on each side, histologic type, histologic grade (Gleason score), presence of prostate intraepithelial neoplasia (PIN).

2. Staging (see Appendix for the AJCC Staging System)

• Low Risk:
  • Must have all of the following:
    • T1- T2a and Gleason score ≤6 and PSA <10 ng/mL
  • Intermediate Risk:
    • Tumors not meeting criteria for low- or high-risk
    • T2b-T2c or Gleason 7 or PSA 10-20 ng/mL
  • High Risk:
    • Must have any one of the following:
      • T3a or higher; Gleason score ≥ 8; or PSA >20 ng/mL

Dr. Michael Evans developed the One-Pager concept to provide clinicians with useful clinical information on primary care topics.
Treatment

- **Low Risk:**
  - Active Surveillance Protocol:
    - PSA assessment every 3-6 months and DRE annually, at the physician’s discretion
    - Consider repeat biopsies 1-2 years after initial diagnosis, then consider further biopsies every 2-3 years or as clinically indicated
  - Watchful waiting:
    - Elderly patient, life expectancy <10 years, or younger patient with significant co-morbidity
    - DRE and PSA every 6 months
    - Active treatment initiated only at development of symptomatic disease
  - Radical Prostatectomy:
    - Patients no more than 70 years old and with a minimum 10 year life expectancy
  - Radiotherapy:
    - External Beam Radiotherapy (EBRT)
    - Brachytherapy
  - High Dose Rate vs. Low Dose Rate

- **Intermediate Risk:**
  - Watchful Waiting:
    - Option for patients with life expectancy less than 10 years and PSA less than 15 ug/L and/or Gleason score 7
  - Radical Prostatectomy:
    - Patients with 10 or more year’s life expectancy, usually not more than 70 years of age, with no extraprostatic extension on the core biopsy, with low risk of positive margin
  - Radiotherapy:
    - External Beam Radiotherapy (EBRT)
  - Brachytherapy:
    - High Dose Rate vs. Low Dose Rate
  - Cryosurgery:
    - Not as well established as other options; selected patients may be eligible when:
      - Patients with T1-T3 tumors with erectile dysfunction who do not want radical prostatectomy
      - Local external beam radiation failures
      - Brachytherapy failures
      - Poor candidacy for other treatments (patient age and health, prior pelvic radiation, TURP, T3 prostate cancer)

- **High Risk:**
  - Radical radiotherapy with neoadjuvant, concurrent and adjuvant androgen deprivation therapy (ADT):
    - Neoadjuvant ADT with luteinizing hormone-releasing hormone (LHRH) agonist for 2-6 months plus initial oral non-steroidal anti-androgen for 2-4 weeks, concurrent LHRH agonist with radiotherapy, and subsequent adjuvant LHRH agonist for 2-3 years
    - The duration of ADT may be individualized depending on the balance between toxicity and potential benefit
    - Patients on long term ADT (greater than or equal to 6 months) should be put on daily vitamin D 800 IU plus calcium 1500 mg, and serum cholesterol should be monitored
    - A baseline bone density scan should be considered
  - Radical Prostatectomy:
  - Young patients with less than or equal to T3a and grossly negative pelvic lymph nodes
  - Brachytherapy High Dose Rate
  - Cryosurgery
  - Androgen Deprivation Therapy (ADT):
    - Early ADT alone or with prostate only radiotherapy in patients with multiple co morbidities or limited life expectancy, or patients who refuse the above treatment

- **Metastatic Prostate Cancer:**
  - Androgen Deprivation Therapy (ADT)
  - Chemotherapy
  - Radiation

Additional Resources

https://www.cancercare.on.ca/common/pages/userfile.aspx?fileId=139625
https://www.cancercare.on.ca/cms/one.aspx?objectId=10224&contextId=1377

References can be found online at http://www.dfcm.utoronto.ca/programs/postgraduateprogram/One_Pager_Project_References.htm