Prostate Cancer: Innovations & Strategies for Reducing Mental and Physical Impact

Community Medical School
6 September 2016
The problem:

- The Prostate Gland:
  - Natural enlargement/Benign tumors -> urination problems
  - Cancerous changes
Endoscopic View of the Prostate
The Macro and the Micro Prostate
Incidence of Prostate Cancer

Leading Cancer Sites

- Other Sites 38%
- Prostate 25%
- Lung and Bronchus 14%
- Melanoma of the Skin 7%
- Urinary Bladder 7%
- Colon and Rectum 8%

Leading Cause of Cancer Death

- Other Sites 43%
- Lung and Bronchus 28%
- Prostate 10%
- Urinary Bladder 4%
- Pancreas 7%
- Colon and Rectum 8%

Prostate Specific Antigen (PSA)

- **gamma-seminoprotein** or **kallikrein-3 (KLK3)**
- **glycoprotein enzyme** encoded in humans by the **KLK3 gene**
- Secreted into ejaculate to allow sperm movement
Surveillance, Epidemiology, and End Results Program (SEER)
Where are we now with Prostate Cancer trends?

- Study sees rise in advanced prostate cancer cases
- Last Updated Jul 20, 2016 1:38 PM EDT
- The number of new cases of advanced prostate cancer in the United States has soared by about 72 percent in the last decade, according to a new study, but not all experts agree with its findings.
What can a man do to lessen his lifetime risk Prostate Cancer ??

• Know your risk:

• Prevention:

• Early Detection:
Nutrition & Prostate Cancer

• Improved nutrition may reduce the incidence of prostate cancer & also reduce the risk of prostate cancer progression. (J Urol. 2005 Sep;174(3):1065-9).

• “Scientific evidence suggests that differences in diet & lifestyle may account in large part for the variability of prostate cancer rates in different countries” (CaPCure).
Common Sense…and moderation…

- “Let food be your medicine, and medicine be your food” -Hippocrates
“You’ve got to move it, move it....”

- 45 minutes of aerobic activity three days each week =
- amazing improvement in all aspects of health
• **Familial Cancer Program**

The Familial Cancer Program (FCP) provides advanced, multidisciplinary care for individuals and families at elevated risk for developing cancer.
Prostate Cancer Screening:

- **Group** | **Date** | **Recommendation**
- US Preventive Task Force 2012 | | The USPTF recommends **against** PSA-based screening for Prostate Cancer
- American Urological Association 2013 | Q 2 year PSA / DRE / Clarifying tests (PHI, 4 K)
- - with risk age 41 – 54
- - yes age 55 – 69
- - No age 70 plus, unless symptoms
- European Association of Urology 2013 | Baseline PSA at age 40 – 45, if PSA ≤ 0.7, next check at age 55
- - IF at risk, continue q two year examinations
- Canadian Urological Association 2011 | PSA / DRE / Risk Assessment q 1-2 years form age 40
- National Comprehensive Cancer Network 2014 | Age 45-49 with risk, Q 1 year PSA / DRE
- Age 50-70 Q 1-2 year PSA/DRE (consider prostate biopsy if PSA >3.0) > Age 70 – testing if symptoms
Screening for significant Prostate Cancer in Healthy Men

Risk assessment at age 40, if suspicious -> PSA blood test

PSA < 1.0 -> nothing to do until age 50

Age 50 -> PSA and Physical Exam every 2 years

If PSA elevated-> repeat and get free PSA

If suspicious PSA-> get Prostate Health Index blood test-> if suspicious consider prostate biopsy
• Is Cure Possible?
• Is Cure Necessary
• Is Cure Possible Only When It Is Not Necessary?

– Willet F. Whitmore, Jr, MD
Gleason Grading / Prostate Cancer Histopathology

2 <-> 10 Prostate Cancer Pathology Types Only

New Pathology Prostate Cancer Typing

-> Five Pathology Types
Genomics: = the individuals genetic expression

Hazard Ratios for Genes Associated with Metastasis or Death

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Oncotype for Prostate Cancer
Genomics in action:

How will this help manage patients?

- Initial Biopsy
  - Gene Signature “good” → Surveillance
    - Gene Signature “good”
  - Gene Signature “bad” → Treatment
    - Gene Signature “bad”
    - Repeat Biopsy
      - Gene Signature “good”
PCa Predictive Nomograms

- Risk of “organ confined” disease = Curability

- “Disease free” recurrence rates after Treatment

Kattan Nomogram for predicting PSA–free recurrence rate after “radiotherapy”
Advanced Prostate Cancer Therapies

Androgen Deprivation Therapy

Bone Treatment

Chemotherapy

Immunotherapy

Gene Therapy
Unthinkable Prostate Cancer Therapies
Focal Prostate Cancer Therapy

Dynamic contrast-enhanced images

- Bolus of IV gadolinium
- Serial, rapid sequences
- Increased enhancement of prostate cancer compared with normal prostatic tissue - correlates with tumor angiogenesis
Mental health outcomes in elderly men with prostate cancer

SEER database 1992-2005
50,856 men >65 with localized PCa

20.4% developed mental health issues
- Watchful waiting 29.7%
- Radiation 29%
- Radical prostatectomy 22.9%
Support is the key!

The ManVan: a mobile cancer support service for men with prostate, testicular and penile cancer in Wales

Rachel Iredale¹,³, Rhiannon Skilton¹, Richard Pugh¹ and Heather Blake²

¹Tenovus Cancer Care, Cardiff, Wales, UK
²Prostate Cancer UK, London, UK
³University of South Wales, Pontypridd, Wales, UK

- Mobile support service for men with PCa, testicular Ca, Penile Ca
- Nursing care, counseling, group support
- Visited hospitals, supermarkets, social clubs, caravan fairs, rugby grounds
- Early data positive for clinical and psychosocial benefits
Lessons from the field: What is Global Health?

Global health is a collection of health problems, that do not respect “borders”.

• Health issues that transcend national boundaries
• Prevention AND clinical care
• Health equity
• Inter-disciplinary and multi-sectorial
Survivorship is a lifestyle

- Prevention
- Psychological Health
- Coping with direct and indirect adverse treatment effects
Survivorship / Networking:

- Survivorship Groups (Vermont/National/International)
- Prostate Cancer Support Groups
- Vermont Cancer Survivor Network
- Vermont Department of Health (Vermont Cancer Plan)
- Vermonters Taking Action Against Cancer (VTAAC)
Accurate, up to date information

Thank you…………….