The prevalence of prostate cancer among elderly men with hip fractures and osteoporosis fragility fractures

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Impact on increasing use of ADT

- Less than 10% of men with prostate cancer will die of their disease
  - **Co-morbidity** in elderly cancer population

- **Increasing use** of Androgen Deprivation Therapy
  - First line for metastatic disease with depot Gonadotrophin releasing hormone agonists (GnRH)
  - Improves survival in locally advanced or high risk (6 months)
  - For high risk 3 years of therapy recommended after radical treatment
  - Skeletal integrity is compromised by ADT
  - Fracture is rare but has significant implications for both patient and health care providers

*NICE Clinical Guideline Prostate cancer: diagnosis and treatment Jan 2014*
# Prostate cancer: Risk of fractures with long term ADT

<table>
<thead>
<tr>
<th>Study</th>
<th>Men</th>
<th>ADT duration</th>
<th>Fracture risk all sites</th>
<th>Fracture risk Hip</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>ADT</td>
<td>No ADT</td>
</tr>
<tr>
<td>Shahinian et al 2005 NEJM</td>
<td>50613</td>
<td>1yr-5years</td>
<td>19.6</td>
<td>12.6</td>
</tr>
<tr>
<td>Smith et al. 2005 JCO</td>
<td>11661</td>
<td>&gt;12 years</td>
<td>7.88*</td>
<td>6.51*~</td>
</tr>
<tr>
<td>Alibhai et al. 2010 JU</td>
<td>19079</td>
<td>6.7 years</td>
<td>17.2~~</td>
<td>12.7~~</td>
</tr>
</tbody>
</table>

* Rate per 100 person years; ~relative risk 1.21; p<0.001 ~ ~hazard ratio 1.65, 95% CI 1.53-1.78

*Butoescu V & Tombal B (2014) Canadian Journal of Urology, April 2014*
Retrospective analysis

**Aim** - To explore the prevalence of prostate cancer in local fracture datasets.

**Method** - Men were identified from two local sources;

1) A database of all hip fractures in (2006-2012) in a regional centre N=642

2) A database held by the Clinical Nurse specialist for osteoporosis and falls preventions in a NHS Trust (2002-2009); N=459

Datasets were matched against Thames cancer registry to determine cancer diagnosis.
1. Results – Hip fractures data base

642 men from hip fracture database

- **55 PC patients**
- **587 NOT PC patients**

12 men excluded:
- Fracture before PC (5);
- Unknown fracture date (7)

**Age**
- **587 NOT PC**
  - \( n=499 \)
  - \( X = 78\text{yrs (SD 15.0)} \)

- **43 PC**
  - \( n=43 \)
  - \( X = 82\text{yrs (SD 7.5)} \)

**Time from PC to Hip Fracture**
- \( n = 43 : \text{6.7}\% \)
  - \( M = 5.3\text{yrs (IQR = 2.1-9.7)} \)

**Length of Stay**
- \( n = 583 \)
  - \( M = 16\text{ days (IQR = 14)} \)

- \( n = 35 \)
  - \( M = 16.6\text{ days (IQR = 13)} \)

**Hip Fracture to Death**
- \( n = 583 \)
  - \( M = 32\text{ days (IQR = 47)} \)

- \( n = 35 \)
  - \( M = 183\text{ days (IQR = 475)} \)

There was no significant difference in perioperative mortality or LOS

www.surrey.ac.uk
Data set 2: Osteoporosis service

- 459 men only 32 had PC diagnosis (7%)
- Incidence from diagnosis to fracture 4.4 years (SD +2.5)
- Only 15% (3/13) men had received bisphosphonates

Prior falls

ADT for >3mths

Genetic Factors

Physical Activity

Bone Health

Nutrition

Hormone

Body Build

Parental history of hip #

Few had Vit D or calcium supplement

Low or high BMI

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Algorithm for management

Cancer survivors

Individualized assessment of fracture risk
- Screen for osteoporosis risk factors
- FRAX algorithm
- DEXA screening for BMD

Address lifestyle and modifiable risk factors
- Adequate calcium and vitamin D intake
- Physical activity
- Monitor annually for osteoporosis risk factors
- Repeat DEXA every 1-2 years as appropriate

Consider therapy with approved osteoporotic therapy if:
- T score < -1.5 and ongoing cancer therapy† plus 1-2 additional clinical risk factors‡

Strongly consider therapy with approved osteoporotic therapy if:
- T score < -2.0 and ongoing cancer therapy†

Begin therapy with approved osteoporotic therapy if:
- T score < -2.5, or
- High FRAX risk§ or
- Personal fragility fracture
- > age 50

Lustberg, MB et al. 2012 Bone health in adult survivorship JCO 30: 3665-3674
Lifestyle factors ignored

- Elderly men have lower Vit D than healthy populations
- Vit D deficiency associated with increased spinal fractures
  - Studies equivocal!
- Vit D dosage controversial
- Calcium intake controversial
- Weight bearing exercise shown to be beneficial, but also reduce falls

Theodoratu E et al. (2014) Vitamin D and multiple outcomes: umbrella systematic reviews and meta analysis BMJ 348
Falls in men with PC

- Falls and fall induced injuries among older people major health issue, higher in men with ADT
- 70% of all injury related admission
- 1 prospective cohort study risk of falls over 12 months
  - Most falls occurred in the first 3-6 months of ADT initiation
  - Prior history of falls, arthritis and being single
  - Prior screening recommended
- Recommend physical activity and resistance training

Using effectively what we already know

- Assessment:
  - does FRAX, QFracture and Garvan, work sufficiently in this population?
  - Who is assessing bone health?
- How do we collect routine data of SR events?
- How to apply evidence from multi-disciplinary fields i.e. risks and falls services, osteoporosis and older people care?
- Need to recommend lifestyle interventions
- Use existing resources and raise men's awareness
- Multi component interventions

I keep finding these all over the house!

My doctor says bone loss is normal at my age.