Quality of Life During Androgen Deprivation Therapy for Prostate Cancer: A Longitudinal, Controlled Comparison

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Research suggests that androgen deprivation therapy (ADT) for prostate cancer (PC) is detrimental to quality of life (QoL).

Cross-sectional studies – adverse effects for:
- Physical QoL
- Fatigue
- Urinary problems
- Problems with sexual functioning

Uncontrolled, longitudinal studies suggest effects worsen over time.
Background – Longitudinal, controlled studies

- Smith et al., BMJ, 2009
  - Longitudinal study of QoL in ADT+, ADT-, CA-
  - Baseline, 1, 2, 3 (PC only), 5 (CA- only) years
  - Physical QoL declined over time in the ADT+ group only
  - Mental QoL remained stable over time in all groups
  - Urinary bother, Bowel bother and Sexual function worse in PC

- Alibhai et al., JCO, 2010
  - Longitudinal evaluation of QoL in ADT+, ADT-, CA-
  - Baseline, 3, 6, 12 months
  - Physical QoL declined over time in ADT+ group only
  - Mental QoL remained stable over time in all 3 groups
Background

- Limitations of existing longitudinal, controlled studies:
  - No “true” baseline assessment
  - Lack of appropriate control groups
  - Infrequent assessment of urinary and bowel problems

- Replication is important
Study Aims

- Examine changes in QoL over a 6-month period among:
  - PC patients on ADT (ADT+)
  - PC patients treated with surgery only (ADT-)
  - Non-cancer controls (CA-)

- Hypothesis
  - QoL will worsen over time in the ADT+ group only
Methods – Study Design

- Longitudinal

3 groups of men:
- Diagnosed with prostate cancer undergoing ADT (ADT+)
- Diagnosed with prostate cancer treated with surgery only (ADT-)
- Non-cancer controls (CA-)

Matched on:
- Age (within 3 years)
- Education (3 levels)
- Time since diagnosis (ADT+ & ADT-)
Methods - Eligibility

- **All participants**
  - ≥ 18 years of age
  - ≥ 6\textsuperscript{th} grade education
  - Able to speak/read English
  - Able to provide informed consent

- **ADT+**
  - Diagnosed with non-metastatic/asymptomatic metastatic prostate cancer
  - Scheduled to be treated with ADT for at least 12 months
  - No previous ADT treatment

- **ADT-**
  - Diagnosed with non-metastatic prostate cancer
  - No other treatment besides a prostatectomy
  - No testosterone supplementation

- **CA-**
  - No history of a cancer diagnosis besides non-melanoma skin cancer
  - No testosterone supplementation
Methods – Procedures

- Recruitment:
  - Men in the ADT+ & ADT- groups were recruited at Moffitt Cancer Center and the James A. Haley VA
  - Men in the CA- group were recruited using a list of names obtained from a marketing firm

- Participants were assessed at the following time points:
  - ADT+ group: prior to beginning ADT & 6 months later
  - ADT- & CA- group: at similar 6-month intervals
Methods - Measures

- **SF-12**
  - Physical Component Summary (PCS)
  - Mental Component Summary (MCS)
  - 8 Subscales

- **CES-D**

- **EPIC (Expanded Prostate Cancer Index Composite)**
  - Urinary Summary Domain Score
  - Bowel Summary Domain Score
## Methods – Participants

<table>
<thead>
<tr>
<th></th>
<th>ADT+</th>
<th>ADT-</th>
<th>CA-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 49</td>
<td>n = 44</td>
<td>n = 33</td>
</tr>
<tr>
<td>Age (years)</td>
<td>69</td>
<td>68</td>
<td>71</td>
</tr>
<tr>
<td>Caucasian</td>
<td>92%</td>
<td>96%</td>
<td>91%</td>
</tr>
<tr>
<td>Married</td>
<td>71%</td>
<td>81%</td>
<td>82%</td>
</tr>
<tr>
<td>College graduate</td>
<td>38%</td>
<td>42%</td>
<td>55%</td>
</tr>
<tr>
<td>Income ≥ 40K</td>
<td>53%</td>
<td>66%</td>
<td>58%</td>
</tr>
<tr>
<td>Time since diagnosis (years)</td>
<td>3.9</td>
<td>5.5</td>
<td>n/a</td>
</tr>
</tbody>
</table>
Methods – Statistical Analyses

- Mixed model ANOVAs were conducted to examine changes in QoL over time
Results – SF-12 PCS

- Group x Time ($p = .03$)

- Time 1
  - ADT+ < ADT- & CA- ($ps \leq .05$)

- Time 2
  - ADT+ < ADT- & CA- ($ps < .001$)

- From Time 1 to Time 2
  - PCS worsened for the ADT+ group only ($p = .02$)
Results – SF-12 MCS

- No Group x Time
- Group effect ($p = .04$)
  - ADT+ group reported lower mental health QoL than ADT- ($p = .03$) and CA- ($p = .04$)
Results – SF-12 Subscales

- **Group x Time (ps < .05)**
  - Physical Function
  - Vitality
    - Time 1: No differences
    - Time 2: ADT+ < ADT- & CA- (ps ≤ .01)
    - Time 1 to Time 2: Worsened for ADT+ only (ps ≤ .01)

- **Group effects (ps ≤ .01)**
  - General Health
  - Role Limitations Physical
  - Role Limitations Emotional
    - ADT+ < ADT- and CA- (ps < .05)
  - Mental Health
    - ADT+ < CA- (p = .01)

- **No differences**
  - Bodily Pain
  - Social Function
Results – CES-D

- Group x Time (p = .02)

- Time 1
  - ADT+ > ADT+ & CA- (ps ≤ .05)

- Time 2
  - ADT+ > ADT- & CA- (ps < .01)

- From Time 1 to Time 2
  - Depressive symptoms worsened for the ADT+ group only (p = .01)
Results – EPIC Urinary Domain

- Group x Time (p < .002)
  - Time 1
    - ADT+ and ADT- < CA- (ps < .01)
  - Time 2
    - ADT+ and ADT- < CA- (ps < .01)
- From Time 1 to Time 2
  - Deficits in the urinary domain increased for the ADT+ group only (p < .001)
Results – EPIC Bowel Domain

- No Group x Time

- Group Effect
  - The ADT+ group reported more deficits in the bowel domain ($p < .001$).
Conclusions

- Findings generally support the hypothesis that QoL would worsen over time in the ADT+ group only

- PC patients initiating ADT are at risk for:
  - Worsening QoL across multiple domains:
    - Physical aspects of QoL
    - Depressive Symptoms
    - Urinary
  - Lower, but not worsening, QoL in terms of:
    - Mental aspects of QoL
    - Bowel
Discussion

- Future research should:
  - Determine whether declines in QoL in ADT+ patients are relatively short-term or long-term concerns
  - Identify strategies for ameliorating the detrimental effects of ADT on QoL
Discussion

- Limitations
  - Small sample size
  - Homogenous sample (race and ethnicity)
  - Limited follow-up period
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Thank you!

- Questions?