Study of Prostate Cancer Screening and Mortality in Blacks and Whites

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Introduction/Background

- Prostate cancer is the leading cause of cancer morbidity
- Second leading cause of cancer mortality among U.S. men
- 30,870 new cases and 4,240 deaths in 2007
- Recent changes attributed to increased awareness and efforts at early diagnosis with the Prostate-Specific Antigen (PSA)

Disparities

- African American men have the higher incidence and mortality rates
- The disparity in morbidity and mortality between African American men in the U.S. has not been adequately studied or explained

Purpose and Design

- To determine if screening with PSA and DRE reduces prostate cancer mortality (efficacy)
- To examine white/black differences in screening and mortality (disparities)
- Design
  - Hospital-based case-control study involving 5 Atlanta counties in SEER area and 23 North Central Florida counties with automated linkage to death certificates

Data Collection

- Cases: Frequency-matched by age and race with controls (n=404)
- Controls: Selected from same hospitals as cases and admitted during the index case date of diagnosis
- Atlanta
  - 312 cases, 182 (58.3%) white
- North Central FL
  - 92 cases, 65 (70.7%) white

Age/Racial Distribution

Age	Cases (%)	Controls (%)
50-64 years	58 (14.4)	102 (25.2)
65+ years	346 (85.6)	302 (74.8)
Race		
White	247 (61.1)	243 (60.1)
Black	157 (38.9)	161 (39.9)
Total	404	404

1. Cases were deaths from PC between 1998 and 2001

2. Identifiers: Name, SSN, DOB, DOD, Race, County

Analysis

- We examined
  - Frequency of DRE and PSA tests
  - Odds ratios for prostate cancer mortality
  - Level of co-morbidity
- Multivariate analysis
  - Logistic regression of the predictors of prostate cancer deaths

Results: Test Frequency

- PSA tests
  - Fewer tests among cases prior to diagnosis
  - White cases had fewer tests ($p<.001$)
  - No differences between black cases and controls in PSA tests ($p=.394$)
  - Race and prior history of cancer influenced tests
- DRE tests
  - Fewer cases (45.6% vs. 54.4%) ever had the test
  - No inter/intra racial differences in DRE tests

Results: Odds Ratios

DRE	Cases	Controls	Total	Odds Ratio	95% CI
+	57	68	125	0.425	0.249-0.725
-	71	36	107		
PSA					
+	91	88	179	0.447	0.221-0.819
-	37	16	53		

- Odds of dying from prostate cancer were 57.5% lower among persons who had DRE test prior to diagnosis

- Odds of dying were 55.3% lower when PSA is taken prior to diagnosis

Results: Co-morbidity

Co-morbid Condition	Patient Status in the Study	
	Controls	Cases
Congestive heart failure	49 (12.1%)	181 (44.8%)
Depression	27 (6.7)	176 (43.6)
Cerebrovascular accident	51 (12.6)	6 (1.5)
COPD	83 (20.5)	185 (45.8)
Hypertension	186 (46.0)	223 (55.2)
Non-prostate cancers	81 (20.0)	131 (32.4)
Diabetes	93 (23.0)	176 (43.6)

- More severe disease course exhibited among men who die of prostate cancer due to excessive co-morbidity
- High co-morbidity level among cases regardless of

Results – Logistic Regression

Variable	Odds Ratio	95% CI
Age	1.02	**1.002 – 1.042**
Race (W)	0.92	0.591 – 1.434
Co-morbidities	1.15	**1.106 – 1.201**
History of Cancer (Y)	1.29	0.798 – 2.074
DRE	0.92	0.549 – 1.549
PSA	0.65	**0.564 – 0.754**
Marital Status (M)	1.16	0.750 – 1.797

- Persons who die from prostate cancer are less likely to have multiple PSAs
- Co-morbidity increases the risk of death
- Older age related to prostate cancer deaths

Conclusions (1)

- Screening rates lower in men dying of prostate cancer
- Tests shown to reduce the odds of prostate cancer deaths
- Men dying of prostate cancer were less likely to have multiple PSAs
- Black men less likely to receive DRE/PSA tests

Conclusions (2)

- Planned vs. incidental tests
- Need for more aggressive screening guidelines
- Culture-sensitive adaptation of the guidelines
  - Types of tests
  - Education for screening decisions
  - Treatment of co-morbidity
- Results from clinical trials