MP57-07 - Prostate cancer screening among elderly men: should we diagnose or not?

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INTRODUCTION

Prostate cancer (PCa) is a major issue in cancer incidence and mortality worldwide[1,2]. The effects of screening on PCa mortality are controversial[3,4], and data regarding this topic among elderly men are still lacking. The large prospective studies ERSPC[5] and PLCO[6] included few men aged over 70 years, and none over 75 years.

Screening has not been systematically performed in a large proportion of the Brazilian population.

We hypothesized that individuals aged over 70 years, not previously screened, may present more aggressive disease at diagnosis.

OBJECTIVES

To compare prevalence and aggressiveness of prostate cancer diagnosed in men aged 70 years and above.

METHODS

We performed a cross-sectional study including 17,571 volunteers in Brazil, from 231 municipalities of 6 states visited by the Mobile Cancer Prevention Unit program of the Barretos Cancer Hospital (BCH), between 2004 and 2007, as reported previously by Faria et al[7,8].

Screening was performed by digital rectal examination and prostate-specific antigen (PSA) measurement, in men aged ≥45, without an upper age cut-off. The criteria for prostate biopsy were: PSA>4.0ng/ml, or PSA 2.5-4.0ng/ml with free/total PSA ratio ≤15%, or suspicious digital rectal examination (DRE) findings.

The biopsy protocol consisted of transrectal ultrasound guided biopsies with mean 14 cores. Men with a positive result were clinically staged by magnetic resonance imaging and conventional bone scan. The TNM staging, Gleason score and D'Amico risk stratification systems were utilized. The whole health care was provided through the public health system at the BCH.

The screened men were stratified in two age groups (45-69 years old, and ≥70 years old). These groups were compared regarding prostate cancer prevalence and aggressiveness criteria (PSA level, Gleason score from biopsy and clinical TNM staging).

Statistical analysis was performed using χ^2 (chi-square) tests and Bonferroni correction. According to our study design, the preferential measure of association utilized was the *prevalence ratio* (PR). When appropriate, we also calculated the *odds ratio* (OR). The significance level considered was p<0.05 for all tests.

RESULTS

The prevalence of prostate cancer in our study was 3.71%. The group of men aged 70 years and above presented disease prevalence about 3 times higher than the group of younger men (*prevalence ratio* - PR 2.9; p<0.001), and greater likelihood to present prostate cancer with PSA level above 10.0ng/ml (*odds radio* - OR 2.63; p=0.003). The group of elderly men also presented prevalence of histologically aggressive disease (Gleason 8-10) 3.59 times higher (p<0.001) and greater prevalence of metastases (PR 4.95; p<0.05).

Table 1. Prostate biopsy results and prostate cancer prevalence

	Total	Group A (age 45-69)	Group B (age ≥70)	PR	p
Biopsied men, n (prevalence)	1.647 (9.4%)	1,088 (7.6%)	559 (17%)	2.24	<0.01
PCa cases, n (prevalence)	652 (3.7%)	382 (2.7%)	270 (8.2%)	2.9	<0.01
Biopsy positivity rate	40%	35%	48%	1.38	<0.01
Total, n	17,571	14,287	3,284	-	-

Abbreviations: PR = prevalence ratio; p = p value; n = number; PCa = prostate cancer.

Table 2. Gleason score from biopsy

	Total	Group A (age 45-69)	Group B (age ≥70)	PR	p
Gleason ≤6, n (%)	440 (67.5%)	276 (72.2%)	164 (60.8%)	0.8	<0.01
Gleason 7, n (%)	166 (25.5%)	93 (24.4%)	73 (27%)	1.1	0.06
Gleason 8-10, n (%)	46 (7%)	13 (3.4%)	33 (12.2%)	3.6	<0.01

Abbreviations: PR = prevalence ratio; p = p value; n = number.

Table 3. TNM Staging

	Total	Group A (age 45-69)	Group B (age ≥70)	PR	p
cT					
T1, n (%)	498 (76.4%)	305 (79.8%)	193 (71.5%)	0.9	<0.05
T2, n (%)	111 (17.0%)	56 (14.7%)	55 (20.4%)	1.39	0.09
T3, n (%)	40 (6.1%)	20 (5.2%)	20 (7.4%)	1.42	0.09
T4, n (%)	3 (0.5%)	1 (0.3%)	2 (0.7%)	2.83	0.09
cN					
N0, n (%)	624 (95.7%)	371 (97.1%)	253 (93.7%)	0.96	0.05 (NS)
N1, n (%)	26 (4.0%)	11 (2.9%)	15 (5.6%)	1.98	NS
cM					
M0, n (%)	634 (97.2%)	378 (99.0%)	256 (94.8%)	0.96	<0.05
M1, n (%)	18 (2.8%)	4 (1.0%)	14 (5.2%)	4.95	<0.05

Abbreviations: TNM = Tumor-Node-Metastasis; PR = prevalence ratio; p = p value; c = clinical; n = number.

CONCLUSIONS

Men aged 70 years and above presented higher prevalence of prostate cancer and higher probability to present high-risk disease at diagnosis, when compared to men aged 45-69 years. Screening of prostate cancer in men aged over 70 years and life expectancy over 10 years may be relevant in Brazil.

REFERENCES

1. Torre LA et al. Global Cancer statistics, 2012. *CA: A Cancer Journal for Clinicians* 2015; 65(2): 87-108.
2. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2017. *CA: A Cancer Journal for Clinicians* 2017; 67(1): 7-30.
3. Tsodikov A et al. Reconciling the effects of screening on prostate cancer mortality in the ERSPC and PLCO trials. *Annals of Internal Medicine* 2017; 167(7): 449-455.
4. Fenton JJ et al. Prostate-specific antigen–based screening for prostate cancer: a systematic evidence review for the U.S. Preventive Services Task Force. *AHRQ Publication No 17-05229 2017.*
5. Schröder FH et al. Screening and prostate cancer mortality: results of the European Randomized Study of Screening for Prostate Cancer (ERSPC) at 13 years of follow-up. *Lancet* 2014; 384: 2027-2035.
6. Pinsky PF et al. Extended mortality results for prostate cancer screening in the PLCO trial with median follow-up of 15 years. *Cancer* 2017; 123(4): 592-599.
7. Faria EF et al. Program for prostate cancer screening using a mobile unit: results from Brazil. *Urology 2010;* 76(5): 1052-1057.
8. Faria EF el al. Comparison of clinical and pathologic findings of prostate cancers detected through screening versus conventional referral in Brazil. *Clinical Genitourinary Cancer* 2011; 9(2): 104-108.

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