

Prostate Cancer Research Factor Study



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ABSTRACT

TITLE:
Prostate Cancer Research Factor Study

BACKGROUND:
Prostate cancer is the most common malignant cancer found in men, (Mink, 2008). Exposure to man- made compounds known as xenoestrogens during the critical window of vulnerability may increase the risk of prostate cancer. More specifically, hormonally active chemicals found in a person's occupational environment as well as their individual lifestyle and genetic influences are postulated to increase the risk of prostate cancer.

OBJECTIVE:
The objective of this project is to assess individual exposures to xenoestrogens and to determine if there is a significant association between exposure(s) and prostate cancer.

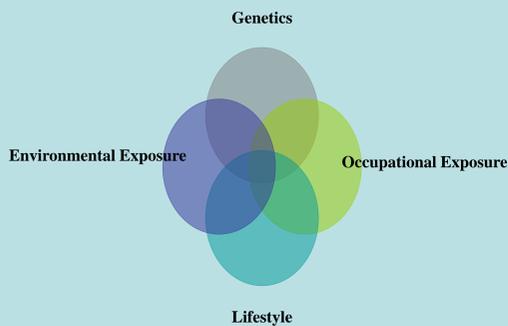
METHODS:
This is a case-control study. Cases were defined as patients who had prostate cancer within the last two years. Controls were defined as having never had prostate cancer or any other prostate related disorder. Information was gathered from the Ottawa cancer center where patients were recruited by a clinician. Information was gathered, coded and analyzed according to meaningful scales. The Statistical Package for Social Science (SPSS) was used to conduct the informational analysis.

RESULTS:
The results indicated that on average, cases were more likely to have been smokers at some point in their life. Cases on average, had higher pack years amongst smokers suggesting an overall higher exposure to smoking related carcinogens. Cases were also more likely to have been exposed to environmental smoke either at home or on the job. Cases were less likely to be in a current relationship. The percentage of cases exposed to biocidal agents and organohalogenes in job related activities was significantly higher among the case population. The opposite was true for ionizing radiation. Limitations of this research study include the small size of the research population and potential recall error amongst patients during data collection.

CONCLUSIONS:
This study suggests that exposure to environmental, occupational xenestrogens and lifestyle factors may result in an increased risk in the development of prostate cancer. Further research is required to fully elucidate whether these findings are representative of the larger population.

BACKGROUND

Etiology of Prostate Cancer



OBJECTIVE

The objective of this project is to assess exposure to xenoestrogens and evaluate the association between lifestyle, environmental and occupational exposures as a risk factor in the development of prostate cancer.

METHODS

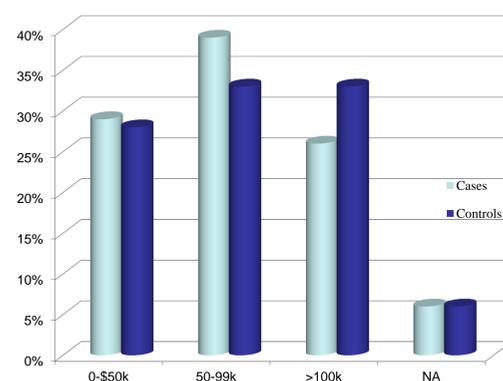
- The matching of cases and controls was +/- 5 year(s) with a matched demographic profile.
- Required information was collected from the cases and controls following the recruitment by the clinician using a specifically designed questionnaire.
- Information was collected from each patient including a demographic profile, lifestyle, dietary habits, lifetime occupational history, lifestyle environmental and residential history, medical history, overall disease profile (related or unrelated to prostate), family history of cancer, information on milestone(s) and on development and growth.
- The data was coded and entered using SPSS and was statistically analyzed using the same software.
- Lifestyle occupational history was computed by coding occupations using the National Occupational Classification System (NOC).
- Environmental exposures (extra-occupational activity) was computed by coding exposures using a specifically designed list of exposures while also considering frequency, duration and type of exposure.
- Smoking history was captured using pack years. Extra-Occupational and Occupational exposure to xenoestrogens was computed for each of the case(s) and control(s) and statistically analyzed using SPSS.
- Due to limited space certain data was not included in this presentation.

Demographical Characteristics

Marital Status	Case %	Control %
Married	7%	40%
Other (divorce, widowed, single)	93%	60%
Education		
Primary Education	31%	30%
University Education	55%	50%
Technical Education	14%	20%

Personal Characteristics	Case Mean SD	Control Mean SD	Sig (p-value)
Height(cm)	176.98M 5.93	176.24M 4.76	.380
BMI	26.74M 3.92	27.23M 4.63	.750
Weight(kg)	83.66M 12.98	85.77M 15.68	.480

Income



RESULTS

Residential Exposure(s)

Residential Characteristics	Case(s) %	Controls %	Sig (p-value)
Lived on a Farm*	14%	15%	p<0.0001
Lived in Other Location*	31%	15%	
Lived in the City*	55%	70%	
Drank City Water*	76%	53%	
Other Water Source(s)*	24%	47%	
Home heated with Gas*	40%	16%	
Home heat with Oil and Other*	60%	84%	
Lived near Industry**	26%	15%	
Never lived near Industry*	74%	85%	
Industry odors apparent in air*	43%	11%	
Industry odors never apparent*	57%	89%	

*Industry is defined as any business in the manufacturing of goods and services
** p-value < 0.0001

Operations During Lifetime

Medical Operation	Case %	Control %
Prostate	40	0
Seminal Vesicles	10	0
Scrotum	3	1
Testes	2	0
Vas Deferens	4	0
Penis	1	0

Smoking

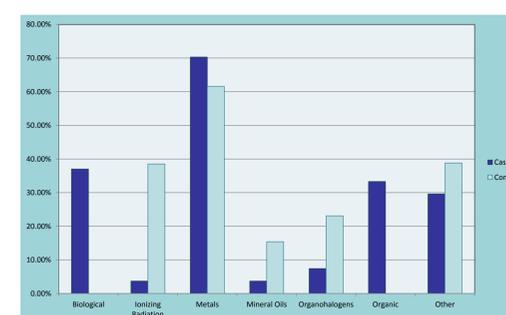
Smoking Profile	Case %	Control %	Sig (p-value)
Smoked in Lifetime	62%	55%	0.00003831
Non-Smokers Lifetime	38%	45%	
Cigarette Smokers	65%	82%	0.01418478
Other Products	35%	18%	
Current Smokers	7%	25%	0.01418478
Current Non-Smokers	93%	75%	
Environmental Smoke Exposure	88%	68%	
Never Exposed to Environmental Smoke	12%	32%	0.01418478
Smoking, Pack Years*	Case	Control	
Current Smoker Pack Years	67.5	42.25	
Quit, Previous Pack Years	9.45	17.33	

*Pack Years is number of packs of cigarettes smoked per year

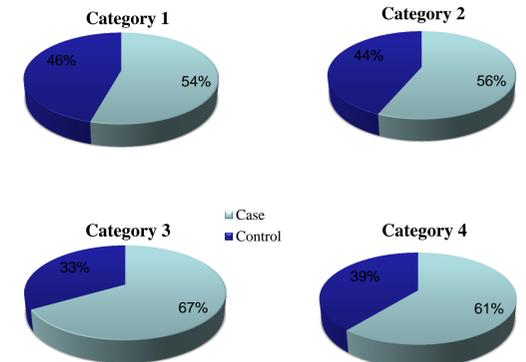
Job Classification

Jobs held during lifetime (categorized according to the National Occupational Classification criteria using skill types)	Case %	Control %
A (Management occupations)	54%	46%
B (Occupations requiring university education)	56%	44%
C (Occupations requiring college education or apprenticeship training)	67%	33%
D (Occupations requiring secondary education or occupation specific training)	61%	39%

On the Job Exposures



RESULTS



Job by Category, %	Categories are defined according to the National Occupational Classification system. NOC Categories 3,4 and 5 have been combined into category 3. NOC categories 6,7 and 8 are combined into category 4.
Category 1	Business Finance and Administration Occupations
Category 2	Natural and Applied Science and Related Occupations
Category 3	Health Occupations, Jobs in Social Science, Education, Government Service, Culture, Recreation and Sport
Category 4	Sales and Service, Trades and Transport, Equipment Operators, Primary Industry Processing, Manufacturing and Utilities.

DISCUSSION

Body Mass Index was lower for cases than controls (26.7% and 27.2%, respectively, p = .750). Cases were more likely to have smoked at some point during their life (62%, 55%, respectively). Cases had higher pack-years than controls (68, 42, respectively). Of note, cases reported higher exposures to environmental smoke. Cases were more likely to have lived near an industry than controls (26%, 15%, respectively). Cases were more likely to have used city water sources, (76%) and controls were more likely to have used other water sources (47%). Other sources of water included town water, river water or bottled water.

Jobs held by study patients were divided by category and skill level as defined by the National Occupational Classification System of the Government of Canada, (NOC). The NOC is the nationally accepted reference for organizing work by skill and category level. Occupations were divided into four categories: management occupations, occupations requiring university education, college education and technical training. Cases were more likely to hold jobs where a University education was required. Similarly, more of the cases held jobs that required a college education or occupation-specific training. Xenoestrogen exposure was defined as on the job exposure to potential cancer causing agents. These agents were divided into 7 categories: biological, ionizing radiation, metals, mineral oils, organohalogenes, organics and others. Cases were exposed to higher levels of biological, organic chemicals and metals than controls. Controls were exposed to higher levels of radiation as well as mineral oils and organohalogenes. These results suggest that exposure to xenoestrogens and smoking, more specifically, higher pack years, as well as exposure to environmental smoke may contribute toward the development of prostate cancer.

CONCLUSION

This study suggests that exposure to environmental xenoestrogens and certain lifestyle factors may increase a person's lifetime risk of developing prostate cancer. Further research is required to fully elucidate whether these findings are representative of the larger population.

Acknowledgements

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