

Ethnic Paradigms in Prostate Cancer - Does it really matter?

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Introduction

- Prostate Cancer (PCa) is the 5th cause of cancer death in men
- Belgium:
 - > PCa incidence en 2014: 145,3 / 100.000 new cases/ per year⁽¹⁾
 - > Immigrants / immigrant descendants: 24,2% of the population
 - 46% of which coming from countries outside the EU ⁽²⁾
 - Moroccan **Arabs** represent the majority of them⁽³⁾

1) Belgian Cancer Registry. Incidence Fact Sheet Prostate Cancer 2014

2) Hanseeuw L. Belgique, Terre d'Immigration: Statistiques et Evolutions. ITINERA Institute Analyse 2012

3) Belgium Federal Government. https://www.belgium.be/en/about_belgium/country/Population

Introduction

- There is a huge variability in PCa prevalence described around the world
- Incidence rate of PCa in the Arab countries is lower than the western world ⁽⁴⁾
- Regardless of this lower incidence rate in **Arabs**, they still present with a higher grade and a more aggressive PCa!

4) Hilal L, Shahait M, Mukherji D *et al.* Prostate Cancer in the Arab World: A View From the Inside. *Clin Genitourin Cancer* 2015; 13(6): 505-11

Objective

- The healthcare system (equal and open) in Belgium provides an excellent opportunity to analyze the variations of PCa among different ethnicities

Subjects and Methods

- Retrospective review of the medical records of all patients who underwent TRUS-guided prostate biopsy in our institution between January 2013 and March 2017
- 16 core TRUS-guided prostate biopsies
- 495 patients in total
- Biopsy analysis done by two pathologists

Exclusion Criteria

- PCa diagnosed by TURP or adenomectomy
- Patients on active surveillance
- Patient of Asian ethnicities were eliminated because of their very low number in our study, n=7

Statistics

- Multi regression analysis:
 - > Statistically interesting ($p < 0,15$) or significative ($p < 0,05$)
- Quantitive variables:
 - > **A-Nova**
- Qualitative variable :
 - > **Chi-square**

Ethnic Groups

● Caucasians

● Arabs

● Africans

Table 1

Patients % (N)	Total 100 (495)	<u>Caucasiens</u>	<u>Africains</u>	<u>Arabes</u>	P Value
N patients	495	66.3% (328)	15.8% (78)	18% (89)	P < 0.001
Age	65.5	66.5	60.7	66.4	
PSA	25.89	29.28	26.45	12.98	P < 0.345
Volume de prostate	43.8	45	42.7	40.3	p < 0.086
<u>Biopsie positive %</u>	58.8	61	64.1	46.1	P < 0.024
Toucher Rectal %	31.8	32	28.6	33.7	P < 0.769
Gleason 6 (%)	51.5	55	54	31.7	P < 0.023
Gleason 7 -10 (%)	48.5	45	46	68.3	P < 0.023

Table 2

Variable	Positive Prostate Biopsy	Gleason ≥ 7	Gleason ≥ 7 (4+3)	\geq High Risk
Arabs	Reference	2.83	2.44	1.97
Caucasians	2.21	Reference	Reference	Reference
Africans	2.52	2.01	5.49	4.59
Age	1.02	1.07	1.09	1.07
PSA	1.06	-	1.06	-
Prostate Volume	0.97	1.02	-	1.02
Abnormal DRE	2.5	-	-	-

Results

● Prevalence:

- > **Arabs** have less diagnosis of PCa
 - Even after adjusting for **age**, **PSA**, Prostate **volume** and **digital rectal exam (DRE)**
- > **Africans** had the same **prevalence** as **Caucasians**
- > **Africans** were diagnosed at a **younger age** (6 years younger)

Results

Positive biopsy:

- > **Caucasians** have a 2,21 times higher risk of having a positive biopsy compared to **Arabs**
- > **Africans** have a 2,52 times higher risk compared to **Arabs**

Gleason Score:

- > **Arabs** have a higher risk of Gleason ≥ 7 , compared to **Caucasians**
- > **Africans** have higher risk of Gleason ≥ 7 (4 + 3) compared to **Caucasians**, but not to **Arabs**

Results

- High risk PCa:

- > **Caucasians** have lesser risk of high risk PCa ($p < 0,046$) than **Arabs** and **Africans**
- > **Africans** have an increased risk of 5.49 times compared to **Caucasians** of Gleason ≥ 7 (4+3)

Discussion

Prevalence

- In our study, **Africans** have the same **prevalence** of PCa as Caucasians
 - > This could be explained by the high incidence of PCa in Belgium (145/100000 in 2014)
 - Belgian population has the same prevalence of PCa as Black occidental population in UK and USA ^(5,6)

5) Ben-Shlomo Y, Evans S, Ibrahim F *et al.* *The risk of prostate cancer amongst black men in the United Kingdom: the PROCESS cohort study.* *Eur Urol* 2008; 53(1): 99-105

6) Center for Control and Disease Prevention. 2014. <https://nccd.cdc.gov/USCSDataViz/rdPage.aspx>. [Online] [Cited: 06 27, 2017]

Prevalence

- **Arabs** have less **prevalence** of PCa compared to **Caucasians** or **Africans**
 - > 45% less probability of PCa diagnosis compared to **Caucasians**
 - > 39,7% less probability of PCa diagnosis compared to **Africans**

Score de Gleason

- **Arabs** (compared to **Caucasians**) have:
 - > 183% more probability of Gleason score ≥ 7
 - > 144% more probability of Gleason score ≥ 7 (4 + 3)
- **Africans** also have a higher risk of Gleason score ≥ 7 (4+3) compared to **Caucasians** (OR 5,49)

Causes

- Importance of ethnic background
 - > Usual arguments found in the literature
 - **Arabs** are younger, and present with lower PSA and prostate volumes, dietary regimen, limited access to health care
 - Don't apply on our cohort
 - **Africans** are the youngest (not statistically significant)
 - PSA and prostate volumes are not statistically different between ethnic groups in our cohort

Healthcare System

- Healthcare in Belgium is provided to the whole population, unrelated to socio-economic status
- Belgium has one of the **lowest** relative indexes of **inequality** in Europe, and therefore, socio-economic status is not a limiting factor to access to healthcare (7)

7) Mackenbach JP, Stirbu I, Roskam AJ *et al.* Socioeconomic inequalities in health in 22 European countries. *N Engl J Med* 2008; 358(23): 2468-81

Belgium

- 24,2% of its population is of immigrant origins
 - > 46% of which are from outside the EU
- **Arabs / Africans** present in principle, with the same environmental exposures as **Caucasians** and in an equal-access health care system, independent of socio-economic status

Limitations

- Sample size
 - > Specifically for **Arabs** and **Africans**
- Single center study
- Lack of detailed family history
- Lack of details about year of immigration/settlement in Belgium

Conclusion

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- Genetic component might be responsible for these variations, since the usual arguments of life style, diet and healthcare access could be minimized in a multiethnic country like Belgium
- Implications
 - > **Arabs** should not be treated as **Caucasians** in relation to the risk for clinically significant PCa (Gleason ≥ 7) and High Risk PCa
 - > Foreseen limitations for some treatment options such as **active surveillance**

