Risk of Cancer among Hispanics with AIDS Compared with the General Population in Puerto Rico: 1987-2003

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The collection of cancer-incidence data was supported, in part, by the National Program of Cancer Registries (NPCR) of the Centers of Disease Control and Prevention (CDC) by the Puerto Rico Central Cancer Registry, Grant #1U58DP000782-04. The ideas and opinions expressed herein are those of the author(s) and endorsement by the Puerto Rico Central Cancer Registry is not intended nor should be inferred.

Abstract

Background: The risk of cancer among Hispanics with Acquired Immune Deficiency Syndrome (AIDS) in the United States and Puerto Rico (PR) has not been well described. The purpose of this study was to determine the risk of AIDS related and non-AIDS related cancers among Hispanics with AIDS in PR. Methods: A probabilistic record linkage of the PR AIDS Surveillance Program and PR Central Cancer Registry databases was conducted. AIDS cases were grouped according to year of AIDS onset and antiretroviral therapy availability: 1987-1989 limited availability), 1990-1995 (mono and dual therapy), and 1996-2003 (highly active antiretroviral therapy: HAART). Cancer risk was described using the standardized incidence ratios (SIR). Results: A total of 612 cancers were identified after 3 months of AIDS diagnosis: 409 (66.7%) AIDS related and 203 (33.1%) non-AIDS related. Although a decreasing trend in the risk of AIDS and non-AIDS related cancers was observed, the risk for both remained higher in the AIDS group compared to the general population in PR. Non-AIDS related cancers with higher risk during the HAART availability were: oropharyngeal, anal, liver, larynx, eye and orbit, Hodgkin lymphoma, and vaginal. Conclusion: Hispanics with AIDS in PR consistently showed a greater risk of AIDS and non-AIDS related cancers compared to the general population in PR and that has not changed over time. [*P R Health Sci J 2010;3:256-264].*

Supported by NIH/NCI P20 CA096256 and CA096257

Introduction

- Puerto Rico is one of the top 10 USA States and territories with the highest cumulative number of AIDS cases and Puerto Ricans are the 2nd largest group of Hispanics in the USA with higher cancer mortality rates.
- The incidence of non-AIDS defining cancers has increased over the past 10 years, more than any of the AIDS defining cancers (1).
- The risk of cancer among Hispanics with AIDS in the USA or Puerto Rico has not been well studied.
- The purpose of this study was to estimate the risk of AIDS related and non-AIDS related cancers among Hispanics with AIDS in PR
- We hypothesized that the incidence of many non-AIDS defining cancers would be higher in the AIDS group compared with the general population in Puerto Rico.

Methods

- The Puerto Rico AIDS Surveillance and Puerto Rico Central Cancer Registry Databases were linked using a probabilistic matching algorithm with data on name (last name, first name), social security number, sex, date of birth, and date of death.
- Authorized personnel from both registries reviewed potential matches to assess their validity and a database with no identifying information was provided to the investigators.
- AIDS patients were grouped according to year of AIDS onset: 1987 – 1989 (limited antiretroviral therapy), 1990 – 1995 (mono and dual therapy), and 1996 – 2003 (highly active antiretroviral therapy = HAART).
- Invasive cancers were coded according to the International Classification for Diseases of Oncology and analyzed using the Surveillance, Epidemiology and End Results (SEER) programs.
- Cancer risk was described using the standardized incidence ratio (SIR).

Results

Table 1. Demographics of AIDS patients in Puerto Rico, 1987-2003 (n=28,460)

Characteristic	AIDS Diagnosis Year			
	1987-1989	1990-1995	1996-2003	P-value*
Total Sample	3720 (13.1)	13844 (48.6)	10896 (38.3)	<0.0001
Gender (n, (%))				
Male	3013 (81.0)	10724 (77.5)	7893 (72.4)	<0.0001
Female	707 (19.0)	3120 (22.5)	3003 (27.6)	
Age at AIDS (n, (%))				
<15 yrs	119 (3.2)	214 (1.6)	81 (0.7)	<0.0001
15-29 yrs	877 (23.6)	2586 (18.7)	1341 (12.3)	
30-39 yrs	1702 (45.8)	6184 (44.7)	4345 (40.0)	
40-49 yrs	706 (19.0)	3408 (24.6)	3338 (30.6)	
50+ yrs	316 (8.5)	1452 (10.5)	1791 (16.4)	
Mode of HIV exposure (n, (%))				
MSM†	549 (14.8)	2285 (16.5)	1709 (15.7)	<0.0001
IDU ‡	2177 (58.5)	7044 (50.9)	4858 (44.6)	
MSM + IDU	371 (10.0)	973 (7.0)	628 (5.8)	
Hemophilia	17 (0.5)	28 (0.2)	6 (0.1)	
Heterosexual	343 (9.2)	3112 (22.5)	3523 (32.3)	
Transfusion	77 (2.1)	96 (0.7)	12 (0.1)	
Other / Unkown	67 (1.8)	92 (0.7)	79 (0.7)	
Pediatric	119 (3.2)	214 (1.6)	81 (0.7)	

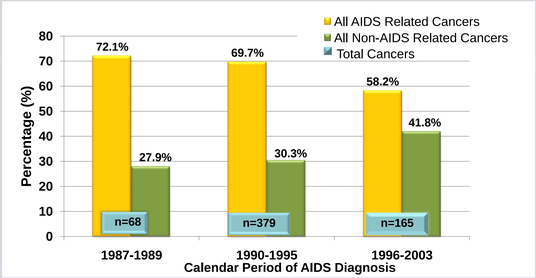
† MSM men who have sex with men; ‡ IDU injection drug use; * P-values using χ^2 test

Table 2. Risk of cancer among people with AIDS (>3 months after AIDS diagnosis) in Puerto Rico, 1987-2003

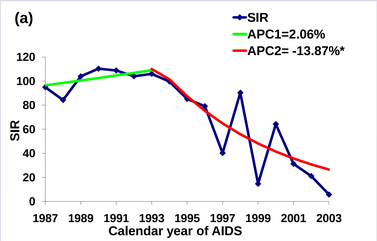
Cancer	Standardized Incidence Ratio (95% CI)		
	1987-1989	1990-1995	1996-2003
Non-AIDS Defining Cancers			
Anal	0.0 (0.0 –215.0)	119.7* (57.4 – 220.2.0)	19.4 * (2.4 – 70.2)
Hodgkin Lymphoma	46.7* (12.7– 119.6)	11.6* (3.2 – 29.7)	19.4* (6.3 – 45.3)
Larynx	14.5 (0.4 – 80.8)	6.4 (0.8 – 23.3)	9.1* (1.9 – 26.5)
Liver	0.0 (0.0 – 55.6)	5.6 (0.7 – 20.3)	14.9 * (6.0 – 30.7)
Oropharyngeal	0.0 (0.0 – 14.3)	6.7* (2.7– 13.8)	9.8* (4.5 – 18.5)
Vaginal	0.0 (0.0 – 533.5)	42.5* (5.1 – 152.5)	33.9* (4.1 – 122.5)
AIDS Defining Cancers			
Cervix	46.5* (9.6– 135.8)	67.7* (43.4– 100.8)	28.7* (14.8 – 50.2)
Kaposi Sarcoma	350.4* (238.1 – 497.4)	303.7* (259.0-353.9)	277.8* (202.6 – 371.7)
Non-Hodgkin Lymphoma	77.0* (43.1 – 127.0)	70.8* (55.8 – 88.6)	39.6* (28.2 – 54.1)

*Statistically significant (p<0.05)

Figure 1. Cancer incidence(>3 months after AIDS diagnosis) (n=612)



Risk of All AIDS Related Cancers



Risk of All Non-AIDS Related Cancers

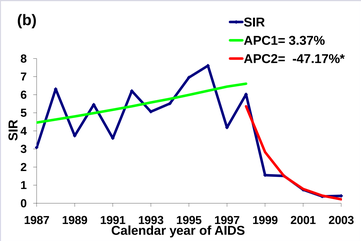


Figure 2. Risk of all AIDS related cancers (a) and all non-AIDS related cancers (b) in AIDS patients in Puerto Rico by calendar year from 1987 to 2003 using the Joinpoint regression model (APC, annual percent change; * P < 0.05)

Conclusions

- The risk of all AIDS related cancers was higher in the AIDS group compared to the general population in PR for all time periods evaluated; however, the risk has declined over time
- Similar to other reports in the USA, the non-AIDS related cancers with higher incidence among AIDS patients in Puerto Rico are: anal, Hodgkin lymphoma, liver, and oropharyngeal.
- Clinicians should be aware of these risks and implement screening and preventive strategies for this population.

References

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Acknowledgements

Supported by NIH/NCI P20 CA096256 and CA096257