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Omics: Tools to address the high mortality rate from prostate cancer in Puerto Rican males

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Abstract

In Puerto Rico, prostate cancer (PCa) age adjusted death rate between 2004-2008, was 30.1 per 100,000 males per year, higher than for Hispanics (21.2) and white non Hispanics (26.4) in the United States. Prostate Specific Antigen (PSA) has a low specificity and positive predictive value in our population and correlates poorly with cancer progression which is 68% overweight. This prompts the need for a better marker. Recognizing the multiplicity of factors that may influence the onset and progression of PCa, our group is involved in studying the relationship of Ancestry Informative Markers (AIMs) and polymorphisms with risk/aggressiveness of prostate cancer in Puerto Rico. We have also studied the distinct expression of proteins in the serum of untreated Puerto Rican PCa patients.

Results from our proteomics studies show that two proteins MDM2 and IGFBP-3 are overexpressed in PCa patients when compared to healthy patients ($p=0.008$)and ($p<0.01$) and that their expression shows a direct relationship with tumor Gleason Score. In contrast there is a decrease in expression for ApoA1in PCa patients, ($p=0.004$) when compared with healthy patients.

Results for our polymorphism analysis for 300 samples reveals that there is a distinct SNP in chromosome 15 associated with PCA risk ($p=0.04$). Initial analyses also show some correlations with disease severity based upon Gleason score.

These results will be further tested in a bigger cohort but still provide additional information for the use of these genomic and proteomic markers to decipher PCa in this population. (Support 1SC3GM084769) (U54 CA 96300/U54 CA 96297) (IRB 8860204)

Biography

Margarita Irizarry-Ramírez is a professor at the School of Health Professions of the University of Puerto Rico. She trained at the Lawrence Berkeley National Laboratory in California and the Department of Embryology of the Carnegie Foundation in Maryland. She has a PhD in Biochemistry and Molecular Biology from the University of Puerto Rico. Dr. Irizarry-Ramírez group has focused in studying prostate cancer to diminish its high mortality rate.