Controversies and evidence for cardiovascular disease in the diverse Hispanic population

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ABSTRACT

Objective: Hispanics account for approximately 17% of the U.S. population. They are one of the fastest growing racial/ethnic groups, second only to Asians. This heterogeneous population has diverse socioeconomic conditions, making the prevention, diagnosis, and management of vascular disease difficult. This paper discusses the cultural, racial, and social aspects of the Hispanic community in the United States and assesses how they affect vascular disease within this population. Furthermore, it explores risk factors, medical and surgical treatments, and outcomes of vascular disease in the Hispanic population; generational evolution of these conditions; and the phenomenon called the Hispanic paradox.

Methods: A systematic search of the literature was performed to identify all English-language publications from 1991 to 2014 using PubMed, which draws from the National Institutes of Health and U.S. National Library of Medicine, with the words "cardiovascular disease," "prevalence," "vascular," and "Hispanic." An additional search was performed using "cardiovascular disease and Mexico," "cardiovascular disease and Cuba," "cardiovascular disease and Puerto Rico," and "cardiovascular disease and Latin America" as well as for complications, management, outcomes, surgery, vascular disease, and Hispanic paradox. The resulting publications were queried for generational data (spanning multiple well-defined age groups) regarding cardiovascular disease, and cross-references were obtained from their bibliographies. Results are segmented by country of origin.

Results: Compared with non-Hispanic whites, Hispanics face higher risks of cardiovascular diseases because of a high prevalence of high blood pressure, obesity, diabetes mellitus, and ischemic stroke. However, the incidence of peripheral arterial disease and carotid disease appears to be significantly lower than in whites. The Hispanic paradox (lower mortality in spite of higher cardiovascular risk factors) may relate to challenges in ascribing life expectancy and cause of death in this diverse population. Low socioeconomic status and high prevalence of concomitant diseases negatively influence the outcomes of all patients, independent of being Hispanic.

Conclusions: Understanding the cultural diversity in Hispanics is important in terms of targeting preventive measures to modify cardiovascular risk factors, which affect development and outcomes of vascular disease. The available literature regarding vascular disease in the Hispanic population is limited, and further longitudinal study is warranted to improve health care delivery and outcomes in this group. (J Vasc Surg 2018;67:960-9.)

Hispanics account for approximately 17% of the population of the United States. They are one of the fastest growing racial/ethnic groups, second only to Asians.[1] Their backgrounds are diverse, originating from Cuban, Mexican, Puerto Rican, South or Central American, and Spanish descent.[2] They may be of any race, ancestry, ethnicity, or combination[3] and may come from any socioeconomic class, linked by a common language, Spanish.[4-6] It is thus difficult to consider the Hispanic population as a single group. Hispanics are racially diverse, being predominantly mestizos, a mixture of Native Indian with white or black ancestry.[7-10] The effects of ancestry on vascular disease and outcomes are difficult to isolate without considering the effects of where these individuals live. Differences have been demonstrated in neurologic events between Mexican Americans residing in Miami and Mexicans residing in their homeland.[11] Therefore, effective delivery of vascular health care requires an understanding of this unique population's cultural similarities and differences with the remainder of the U.S. population as well as with each other. This review explores risk factors, medical and surgical treatments, and outcomes of vascular disease in the Hispanic population and generational evolution of these conditions as well as the Hispanic

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paradox. This concept describes the suggestion of a lower cardiovascular mortality in Hispanics than in non-Hispanics despite their clearly documented worse cardiovascular disease (CVD) risk profile.[12]

METHODS

A systematic search of the literature was performed to identify all English-language publications from 1991 to 2014 with the words "cardiovascular disease," "prevalence," and "Hispanic" using PubMed. An additional search was performed using a combination of "cardiovascular disease and Mexico," "cardiovascular disease and Cuba," "cardiovascular disease and Puerto Rico," and "cardiovascular disease and Latin America." The resulting publications were queried for generational data (spanning multiple well-defined age groups) regarding CVD. Publications that contained data related to CVD prevalence in different age groups were selected. Articles were chosen from the United States, Mexico, and Central American and South American countries so that the outcomes could be compared across equivalent age groups in populations that had not lived within the United States. Results are segmented by country of origin.

RESULTS

Cardiovascular risk factors and disease for Hispanics

Compared with non-Hispanic whites, Hispanics face higher risks of hypertension (HTN), obesity, diabetes mellitus (DM),[13] and ischemic stroke.[14] Seventy-two percent of Hispanics who had suffered a stroke also had high blood pressure compared with 66% of non-Hispanic whites.[13] Obesity is more prevalent in Mexican Americans, affecting 75% of men and 72% of women aged 20 years and older.[13] Approximately 30% of adult Hispanics have DM.[13] Close to one-third of Mexican American adults aged 20 years and older have CVD.[13]

On the contrary, the incidence of abdominal aortic aneurysms (AAAs),[15] peripheral arterial disease (PAD),[16] and carotid stenosis[17] in the Hispanic population appears to be significantly lower than in the white population. In a Life Line Screening sample of 23,466 patients with AAA, only 0.86% were Hispanic vs 90.73% white and 1.48% African American.[15] An assessment of the incidence of carotid stenosis by Rockman et al using Life Line Screening data demonstrated that compared with white subjects, African American (odds ratio [OR], 0.65), Asian (OR, 0.69), and Hispanic (OR, 0.74) subjects had a significantly lower risk of carotid stenosis, whereas Native American (OR, 1.3) subjects had a significantly higher risk of carotid stenosis.[17] Although these data were taken from >20,000 screening sites, limitations of the data that may introduce some bias include self-referral patients and potential cost constraints, given that there was a fee to undergo screening. It is unclear whether sites from which the data were derived had a distribution over a more dense white population.

Studies comparing the combination of multiple risk factors

In a prospective, multicenter analysis, Daviglus et al evaluated the variation of major cardiovascular risk factors among 15,079 Hispanic subjects from differing Spanish-speaking regions.[18] Hispanic country origins included Cuba, Dominican Republic, Mexico, Puerto Rico, and Central America. Widespread discrepancy for prevalence of cardiovascular risk factors in each ethnic group was identified. Obesity and smoking had the highest prevalence in Puerto Ricans, 40.9% and 34.7%, whereas hypercholesterolemia had the highest prevalence in Central American men (54.9%) and Puerto Rican women (41.0%). Age- and sex-adjusted prevalence of subjects with three or more CVD risk factors was highest in participants of Puerto Rican background.[18]

A cross-sectional population-based study for Latin American countries identified similar findings of CVD risk factor prevalence variations. The Cardiovascular Risk Factor Multiple Evaluation in Latin America (CARMELA) study analyzed subjects from Barquisimeto, Venezuela; Bogotá, Colombia; Buenos Aires, Argentina; Lima, Peru; Mexico City, Mexico; Quito, Ecuador; and Santiago, Chile.[19] The highest prevalence of obesity and DM appeared in Mexican participants (DM, 9%; metabolic syndrome, 27%; and obesity, 31%), whereas smoking and HTN were more prevalent in patients from the other Latin American countries. Barquisimeto, Buenos Aires, and Santiago had the highest prevalence of HTN (25%, 29%, and 24%, respectively) and smoking (Santiago and Buenos Aires, 45% and 39%, respectively).

Three studies have looked at racial differences in stroke and generally have found similar stroke mortality rates for whites and Hispanics.[20-22] Other studies, such as the Brain Attack Surveillance in Corpus Christi (BASIC) Project, showed an increased incidence of stroke among Mexicans compared with non-Hispanic whites (168 vs 136 per 10,000), particularly at younger ages (45-59 years).[23] The Northern Manhattan Study (NOMAS), a prospective, population-based epidemiologic study designed to determine stroke incidence, risk factors, and outcomes in a multiethnic urban population, included Hispanics of primarily Dominican, Cuban, and Puerto Rican origin in comparison to white and black individuals. This study demonstrated that the age-adjusted annual incidence rates of ischemic strokes were lowest in whites, higher in Hispanics, and highest in blacks (relative risk of intracranial atherosclerotic stroke, 5.0 [95% confidence interval (CI), 1.69-14.76] compared with non-Hispanic whites).[14] The incidence of first-time stroke in that population was 22% in whites, 22% in blacks, and 49% in Hispanics. The study further divided the Hispanic population as 55% from Dominican Republic, 13% from Puerto Rico, 11% from Cuba, and 21% other.[14]

Contrary to this, people of Hispanic origin may have a lower prevalence of PAD as well. The Multi-Ethnic Study