CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)

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Project Number

35439

Project Title

Heart Attacks in Young Adults of Central California

Abstract

Objectives/Goals

To investigate the risk factors associated with acute coronary syndrome (heart attack) in young adults in Central California.

Methods/Materials

Patients admitted over a ten-year time period at a regional medical center were included in this case-controlled retrospective study. Using ICD 9 codes, patients admitted with diagnosis of acute coronary syndrome(ACS), STEMI and NSTEMI, were identified. Patients older than 18 years but less than 50 years of age were defined as young ACS patients. Patient 50 years of age or older were defined as old ACS patients. A random sample of 100 patients was selected from each of the four groups. Baseline characteristics including demographic data, comorbid disease diagnose, and laboratory values were collected for patients in each of the four comparison groups (young ACS, old ACS, young non-ACS, and old non-ACS).

Results

Lipid profiles were significantly different in the comparison groups. Young ACS patients had higher mean TG when compared to old ACS patients; (P=0.001). Young ACS patients experienced significantly more metabolic syndrome as defined by TG/HDL ratio greater than 3.5 (P = 0.02). Hypertension was more prevalent in the older ACS patients (71%) followed by older non ACS patients adults (64%) (P=0.001). History of cardiac disease (41%) was more common in older ACS patients as well (P=0.024). Body mass index, race, illicit drug use, and prevalence of diabetes mellitus did not differ significantly between young and old ACS adults or the non ACS groups. On multivariate logistic regression analysis, male sex (OR 2.73, 95% CI 1.38 to 5.39, P=0.001), smoking (OR 2.74, 95% CI 1.47 to 5.09, P=0.005), and metabolic syndrome (OR 2.91, 95% CI 1.52 to 5.5, P=0.006) were independently associated with young patients presenting with ACS.

Conclusions/Discussion

Young adults with ACS in Central California have a different clinical, biochemical, and angiographic profile. Young ACS adults are more likely to be males, smokers, and have propensity for single vessel disease, specifically the left anterior descending artery. Metabolic syndrome is associated with acute coronary syndrome in young adults, and it may be helpful to identify these patients as at risk of premature coronary artery disease. These young adults may require additional risk stratification and control beyond traditional risk factors.

Summary Statement

Risk factors for heart attacks in young adults are uniquely different from traditional risk factors seen in the older population.

Help Received

Research performed under the guidance of Dr.Bipin Joshi at University of California, San Francisco at Fresno.

Preliminary