

Vascular deficits in Native American Women with Metabolic Syndrome

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ABSTRACT

The Native Americans of the Southwest are predisposed to vascular diseases due to health disparate lifestyles influenced by diet, lack of exercise and decreased access to health care. These factors together may be responsible for the co-morbidities developed with Diabetes and Metabolic Syndrome (MetSyn) which are indicators of early onset cardiovascular disease. We evaluated Native American (NA) women diagnosed with MetSyn or Type II Diabetes in New Mexico and compared to sedentary control NA and Caucasian (CA) women during vascular measurements. Previous work from in our lab indicates that the regional populations with elevated metabolic health issues have declining vascular function during the development of MetSyn. **PURPOSE:** We hypothesize that the NA women with MetSyn or Diabetes will have lower vascular responses due to underlying vascular function restrictions compared to CA women of the same groups. **METHODS:** 24 NA (Control=10, MetSyn=10, Diabetic=5) and 30 CA (Control=15, MetSyn=12, Diabetic=3) completed two visits. MetSyn women identified with 3 out of 5 criteria (high triglycerides, HDL<50, higher cholesterol, elevated blood pressure, high fasting glucose and waist circumference greater than 38 inches.) During the experimental visits, measurements of blood lipids, arterial tonometry (PWV and PWA), ECG and FMD limb comparison of the brachial and popliteal arteries were recorded. **RESULTS:** MetSyn NA and CA exhibited differences with significantly higher changes of CA in PTI systole (2,154.7, 2,180.3, $p=0.0921$) while HDL cholesterol (53.375 mg/dL, 58.364 mg/dL, $p=0.0564$) was lower in NA, and Aortic HR (70.556, 78.636, $p=0.03$). Diabetic NA and CA had no differences except in post-insulin (172.122, 78.065, $p=0.05362$). Control NA and CA exhibited distinct increased differences in both groups. CA had higher HR (63 bpm, 67.692 bpm, $p=0.0447$), ISI (1.2325, 0.7908, $p=0.00595$), and FMD Popliteal rate to peak (mm/sec) (0.3330, 0.59, $p=0.03495$). In NA, the Triglycerides (128.11 mg/dL, 70.357 mg/dL, $p=0.000857$), 60 second reperfusion velocity (cm/sec) (48.945, 31.663, $p=0.06762$) were significantly higher. **CONCLUSION:** The data indicated that NA require a longer time period to reach peak vascular dilation. Control Na and CA had the most significance differences potentially due to a more similar vascular response of the control population of NA to the MetSyn NA.

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