Blood Pressure is the Strongest Component Associated with Arterial Stiffness in Mexican Patients with Metabolic Syndrome

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The prevalence of Metabolic Syndrome (MetS) in Mexico increased from 26.6% to 45% in 2012**.** Cardiovascular disease is the main cause of death in Mexico and arterial stiffness (AS) is an early subclinical vascular disease marker.

Objective: The aim of this cross-sectional study was to evaluate the correlation between the components of MetS and AS.

Methods: Sixty-three non-smoking male patients, 40 to 77 years old, were included (22 without MetS and 41 with MetS). Blood pressure and baPWV were measured with the "Vascular Profiler 1000" device (VP-1000) (Omron, Kyoto, Japan). The methodological details have been described previously (1). Mean right and left baPWV values were used for the analysis. Fasting plasma glucose (FPG) was measured using a glucose oxidase technique. Total cholesterol, high-density lipoprotein cholesterol (HDL-c), and triglycerides were assessed by enzymatic methods. All of these measurements were performed using commercially available kits (Beckman Instruments Inc, Brea, Calif.) All values are expressed as an average ± the standard deviation (SD); the association between MetS and AS measurements was analyzed using Pearson's coefficient. $P < 0.05$ was accepted as statistically significant.

Results: Patient characteristics are listed in Table 1. Concerning AS parameters, we observed statistical differences in baPWV and peripheral pulse pressure (PP).

Table 1. Anthropometric, metabolic, hemodynamic and arterial stiffness characteristics of patients without MS (n=22) and with (n=41) and

Metabolic Syndrome

Data	No (n=22)	Yes (n= 41)	p^a
Age, years	55.2 ± 7.8	58.1 ± 7.48	.083
BMI, (Kg/m^2)	28.0 ± 3.2	28.7 ± 2.6	.292
Waist, (cm)	101.5 ± 9.1	101.81 ± 7.1	.988
FPG, (mg/dL)	90. ± 12.1	101.4 ± 19.9	.018
Triglycerides, (mg/dL)	118.6 ± 62.9	194.1 ± 31.46	.002
HDL-c, (mg/dL)	57.6 ± 14.9	48.5 ± 14.4	.019
LDL-c, (mg/dL)	98.5 ± 34.7	103.3 ± 42.1	.653
Total cholesterol, (mg/dL)	182.5 ± 26.3	175.1 ± 47.6	.524
Systolic blood pressure , (mmHg)	123.3 ± 7.8	146. 4 ± 18.0	<0.01
Diastolic blood pressure (mmHg)	76.1 ± 7.2	86.4 ± 9.4	<0.01
Peripheral pulse pressure (mmHg)	47.3± 9.4	59.7±15.4	<0.01
Mean baPWV (cm/s)	1347.0± 173.5	1578.7± 295.0	<0.05

[a] = *Student t* test was used to analyze difference of continuous variables between groups.
Regarding the association of AS and MetS components (Table 2),

Table 2. Correlation between the different components of Metabolic syndrome and arterial stiffness (n=41).

Data	baPWV[b]	*p*	PP[b]	*p*
BMI	-.145	.443	-.283	.073
Waist	-.087	.052	-.314	.052
SBP	.753	<0.01	.853	<0.01
DBP	.603	<0.01	-.005	.976
Triglycerides	.231	.256	-.154	.363
HDL-c	-.236	.246	-.245	.144
FPG	-.065	.758	-.091	.598

[b]**=** Pearson´s r, was used to analyze the correlation between AS variables and MS

among patients with MetS, we observed strong and significant correlations between SBP and baPWV (r=.753, p=<0.001), between DBP and baPWV (r=.603, p=<0.001), and between SBP and PP(r=.853, p=<0.001).

Conclusions: This is the first study conducted in a Mexican patient population that demonstrates that blood pressure is the component of MetS that is most strongly associated with AS.

References: 1.- Yamashina A 2002