

Mean Arterial Pressure as a Component of Metabolic Syndrome.

Purpose

Objectives of this study were to evaluate opportunities of using of mean arterial pressure (MAP) as a component of the metabolic syndrome (MS) instead systolic and diastolic blood pressures (SBP and DBP) and to create a model, using logistic regression.

Methods

A total of 104 persons without any apparent disease were selected. Among these people MS was found in 35, according to NCEP-ATP III definition. One way ANOVA test, multiple comparison tests of means and multiple logistic regression analyses were used. The MAP was obtained by the formula $MAP = SBP/3 + 2DBP/3$.

Results

The four groups used in ANOVA were men and women with and without MS. The ANOVA F-statistic is 17.71 with p-value less than 0.00001. The box plot of ANOVA was shown on Figure 1. The multiple comparison tests showed statistically significant differences between groups of people with and without MS and negligible differences between men and women.

Multiple logistic regressions were used to determine odds ratio (OR) of MS. The first model included the following components of MS - waist (WS), HDL cholesterol, blood glucose (GLU) and serum triglycerides (TG). The second model included WS and TG. MAP was used as the last variable in the both models. All dependent variables, except MAP, were dichotomous. Each dichotomous variable received value 1 if the criterion for corresponding component in definition was met. The p-values for overall models fit statistic was less than 0.00001. The values of regression coefficients and corresponding p-values were calculated (Table 1). Thresholds for OR above which the decision about presence of MS should be made, were found (Table 1).

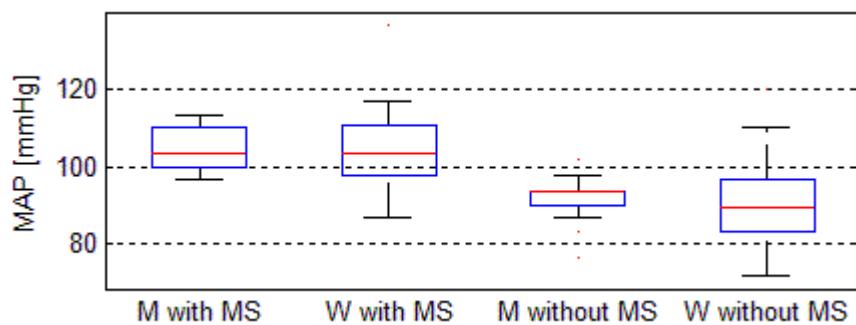


Figure 1

Table 1

Coefficients	Model 1						Model 2			
	b0	WS	GLU	TG	HDL	MAP	b0	WS	TG	MAP
	-97.86	10.55	8.41	11.35	8.28	0.83	-49.16	6.42	8.24	0.42
p	0.015	0.025	0.035	0.021	0.047	0.016	0.0008	0.005	0.002	0.001
Thresholds	1						0.82			
Wrong decisions	with MS		1 (1.45%)				3 (4.35%)			
	without MS		2 (5.71%)				2 (5.71%)			

Conclusions

The results indicated strong relation between value of MAP and MS. The proposed model showed a reliable determination of MS, using only one biochemical marker. Reducing the number of used biochemical marker could improve the cost efficiency in the diagnostication of MS. MAP showed itself as a promising indicator, which after some broader studies could replace SBP and DBP in the MS definition.