

Purpose

To assess the impact of elevated blood pressure (BP) among the various components of metabolic syndrome (MetS) on all-cause mortality.

Methods

Population:

Subjects, aged ≥ 40 years, who had a standard health check-up at the IPC Center (Paris, France) between January 1999 and December 2002:

► **39 998 men** (52.6 ± 8.3 years) and **20 756 women** (54.7 ± 9.2 years), without personal history of cardiovascular disease.

Data collection:

- medical history and lifestyle variables
- clinical parameters (SBP, DBP, height, weight and waist circumference)
- biological parameters on fasting blood sample

For each screened subject, vital status was obtained from the « Institut National de Statistiques et d'Etudes Economiques » (INSEE, France).

Follow-up mortality:

► 3.6 ± 1.1 years. During this period, 271 men and 87 women died.

Statistical analyses:

Cox regression models to evaluate Hazard Ratio (95% CI) for all-cause mortality, adjusted for age, gender, current smoking status, calculated LDL-cholesterol level, declared physical activity, and socio-professional category.

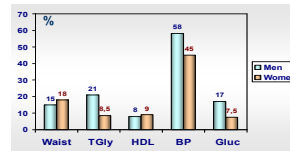
Results

Prevalence

According to the NCEP 2001¹, AHA/NHLBI² and IDF³ definitions, the prevalence of MetS was, respectively: 11.7%, 20.0% and 26.0% in men, and 7.5%, 13.5% and 18.4% in women.

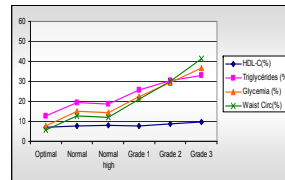
Distribution of various MetS components

NCEP definition : Waist $>102/88$ cm (M/W), Tgly $\geq 1,50$ g/l, HDLc $<0.40/0.50$ g/l (M/W), BP $\geq 130/85$ mmHg, Gluc ≥ 1.10 g/l :

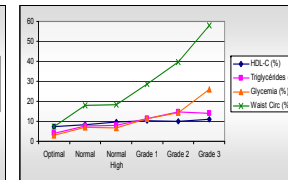


Prevalence of glucose increases with AHA/NHLBI and IDF definitions (Gluc ≥ 1.00 g/l). Prevalence of abdominal obesity increases with IDF definition (Waist $\geq 94/80$ cm M/W).

Prevalence of MetS components (NCEP) in the different BP groups as defined by the ESC-ESH 2003 classification (<120/80, 120-9/80-4, 130-9/85-9, 140-59/90-9, 160-79/100-9, $\geq 180/110$ mmHg)



Men

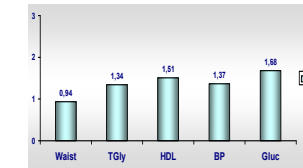


Women

All-cause mortality

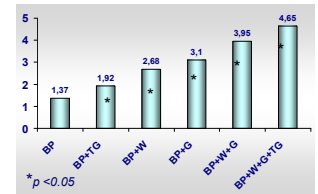
Adjusted risk of mortality in subjects with MetS as compared to subjects without MetS was: 1.79 (1.35-2.38) when the NCEP definition was used, 1.46 (1.14-1.88) when the AHA/ NHLBI definition was used, and 1.32 (1.04-1.67) when the IDF definition was used⁴.

Mortality risk associated with the presence of MetS components (Reference = subjects without any MetS components), adjusted, NCEP definition

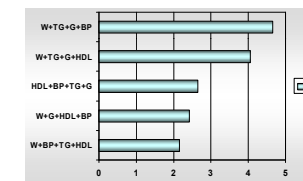


The impact of glucose was reduced for AHA/NHLBI and IDF definitions (glucose ≥ 1.00 g/l).

Impact of BP and associated MetS components on all-cause mortality (Ref. = subjects without any MetS components), adjusted, NCEP definition



Mortality risk related to various 4 MetS components associations (Ref. = subjects without any MetS components), adjusted, NCEP definition



adjusted, NCEP definition

Mortality risk of W+TG+G+BP association was: 3.04 for AHA/NHLBI definition, 3.32 for IDF definition.

Conclusions

Elevated BP ($\geq 130/85$ mmHg) is a major contributing factor to all-cause mortality of MetS because of its prevalence, its impact on prevalence of other MetS components and its deleterious impact on all-cause mortality when associated to other components, especially waist circumference, glucose and/or triglycerides.

References:

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- Grundt SM *et al.* Diagnosis and management of the metabolic syndrome. An AHA/NHLBI scientific statement. Circulation 2005; 112: 2735-52
- Alberti KG *et al.* for the IDF Epidemiology Task Force Consensus Group. The metabolic syndrome - A new worldwide definition. Lancet 2005; 366: 1059-62
- Guize L, Thomas F, Pannier B, Bean K, Jégo B, Benetos A. All-cause mortality associated with specific combinations of the metabolic syndrome according to recent definitions. Diabetes Care 2007; 30

Acknowledgments: This study was made possible with the help of the Sécurité Sociale (CNAMTS et CPAM-Paris) and the Institut National de la Santé et de la Recherche Médicale (INSERM).