

Metabolic syndrome and heart failure: 40 years follow up results of the Seven Countries Study

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Introduction: Metabolic syndrome (Met Sy) as a highly debatable cluster of traditional risk factors is known to promote cardiometabolic-related morbidity and mortality, but its precise mechanisms remain to be determined.

Purpose: We sought to determine influence of MetSy on heart failure (HF) morbidity and mortality in the Seven Countries' Study as one of the oldest epidemiological studies.

Methods: The Seven Countries Study encompassed 12,763 participants from 3 continents who were all healthy men of over 40 years at baseline and who underwent regular check ups every 5 years throughout over a 4 decades' span. Morbidity and mortality was adjudicated according to valid ICD and LPH coding.

Results: Using the IDF definition of the Metabolic Syndrome, 9,09% of participants were identified (Figure 1). HF was confirmed in 220 patients (16.4% alive at 40y follow up visit), while 8.2% died of HF as well in the

same time-frame (Tables 1 & 2). Presence of MetSy has been shown to significantly influence HF mortality (Figures 2) with lowest survival of 22% for 300 months of follow up for patients with both MetSy and HF (Log rank test=4.405, p<0.0001).

Conclusion: Metabolic syndrome treatment remains in the realm of risk factors' control that now we know influence both ischemic heart disease and heart failure of other origins. Historically, just emerging biomarkers' and targeted imaging weren't available to determine such at the time of HF diagnosis. Also, the sample consisted of men only, mainly Caucasian and a modest proportion of Asian and African-American now known to carry ethnic-specific burden of cardiovascular disease. All of the above, emphasizes the importance of more diversity, equity and inclusion-dedicated long term both observational, as well as interventional research.

Figure 1. MetSy distribution according to cohorts

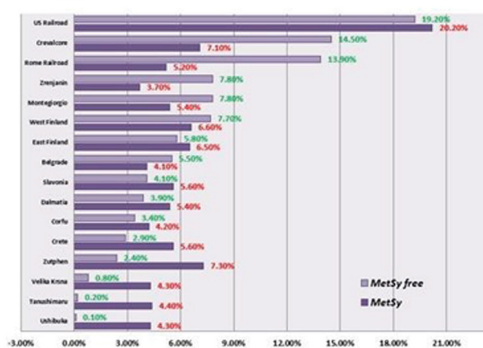


Table 1: HF morbidity distribution

Mb HF	Total N	Dead	Alive at 40Y	
			N	SE
HF- MetSy -	11410	563	10847	95.1%
HF- MetSy +	1133	57	1076	95.0%
HF+ MetSy -	193	15	178	92.2%
HF+ MetSy +	27	3	24	88.9%
Overall	12763	638	12125	95.0%

Table 2: Means for Survival Time

Mb HF	Mean			
	Estimate	SE	95% CI	
			Lower Bound	Upper Bound
HF- MetSy -	463.728	0.681	462.393	465.062
HF- MetSy +	462.132	2.340	457.546	466.718
HF+ MetSy -	356.891	0.991	354.949	358.833
HF+ MetSy +	353.333	3.629	346.221	360.446
Overall	463.441	0.648	462.170	464.712

