Metformin in non-diabetic patients with metabolic syndrome and diastolic dysfunction: the MET-DIME randomized trial

Ladeiras-Lopes R.[1]; Sampaio F.[1]; Leite S.[2]; Santos-Ferreira D.[1]; Vilela E.[1]; Leite-Moreira A.[1]; Bettencourt N.[1]; Gama V.[1]; Braga P.[1]; Fontes-Carvalho R.[1]

[1]Gaia Hospital Centre, Porto, Portugal
[2]Faculty of Medicine, University of Porto, Porto, Portugal

Funding Acknowledgements: Type of funding sources: Private grant(s) and/or Sponsorship. Main funding source(s): Merck

Background: Metabolic syndrome (MetS) affects one out of 3 adults in the western world and is associated with preclinical diastolic dysfunction that impairs functional capacity and quality of life (QoL).

Purpose: This randomized trial was designed to evaluate if the addition of metformin to the standard treatment of non-diabetic patients with MetS improves diastolic dysfunction.

Methods: Prospective, randomized, open-label, blinded-endpoint trial. Fifty-four non-diabetic adults with MetS and diastolic dysfunction were randomized to lifestyle counseling or lifestyle counseling plus metformin (target dose 1000 mg bid). The primary endpoint was the change in mean e' velocity (assessed at baseline, 6, 12 and 24 months). Secondary endpoints were improvements in insulin resistance, functional capacity and QoL. Linear mixed effects modelling was used for longitudinal data analysis using modified intention-to-treat (mITT) and per-protocol (PP) approaches.

Results: Forty-nine patients were included in the mITT analysis (mean age = 51.8 ± 6.4; 55% males). Metformin treatment was associated with a significant decrease in HOMA-IR. There was a significantly different mean change in e' velocity during the study period between trial arms, both in the mITT (at 24 months, change of +0.67 ± 1.90cm/s in metformin arm vs. -0.33 ± 1.50cm/s in control arm) and PP populations (+0.80 ± 1.99cm/s in metformin arm vs. -0.37 ± 1.52cm/s in control arm), using a random intercept linear mixed model. There were no significant differences in peak oxygen uptake and SF-36 scores between trial arms.

Conclusion: Treatment with metformin of non-diabetic MetS patients with diastolic dysfunction, on top of lifestyle counseling, is associated with improved diastolic function.

Abstract Figure.