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Title: Plasma metabolomic signature in COPD patients: Associations to proteomic profile and clinical outcomes

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Body: RATIONALE: The association of plasma metabolomic to clinical outcomes in COPD patients is limited. METHODS: We studied 60 COPD patients, 30 survivors (S) and 30 non-survivors (NS)(mean survival 24 (19) months)and 30 aged-gender matched control group (C). Participants completed lung function tests and components of the BODE index. Plasma samples were studied using Liquid and Gas Chromatography/Mass Spectrometry and 8 biomarkers (ELISA tests). Spearman's rank correlation coefficient was used to measure associations. Each variable is represented by a node, the number of associations between variables as edges and the size of COPD nodes represent the Z-score related to controls. The thickness of the edge represents the strength (rho value) of the association. RESULTS: Survivors had better lung function and lower BODE index than Non survivors. Using a system biology approach, a distinctive pattern of association of metabolites, biomarkers and clinical outcomes in the control group differed from survivors and non-survivors (Figure 1 A-C), characterized by a progressive increment of association(edges) in the COPD groups.

CONCLUSION: Global associations between plasma metabolites, biomarkers and clinical outcomes is altered in COPD patients compared to age matched controls. The alterations are more profound in non-survivors COPD patients suggesting that plasma metabolites would predict clinical outcome in COPD.