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PROTEOMICS DISCOVERY OF BIOMARKERS FOR ATRIAL FIBRILLATION IN PATIENTS WITH CARDIOVASCULAR DISEASE

Poster Contributions
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Background: Atrial fibrillation (AF) is associated with high morbidity and mortality, which is mainly attributed to increased risk of stroke and thromboembolism. Although several risk-stratification scoring systems have been developed, their prognostic value is relatively low. In these terms, biomarkers may be an attractive prognostic tool. Proteomic analysis of patients with advanced cardiovascular disease (CVD) was conducted in order to identify possible biomarkers for AF.

Methods: 123 patients undergoing open heart surgery (22 with AF and 101 without) and 20 healthy subjects were recruited. Demographic data, patient history and blood samples were collected. Growth differentiation factor 15 (GDF15), galectin 3, matrix metallopeptidase 9, tissue inhibitor of metallopeptidases 1, interleukin-6 (IL-6), IL-12a, IL-1A, IL-3, IL-4, IL-8, IL-20, tumor necrosis factor-α, resistin, C-X-C Motif Chemokine Ligand 10 (CXCL-10), CXCL-11, and high sensitive troponin T were measured in blood serum. One-way ANOVA was the method of choice to identify differential expression in patients with AF for any of the measured proteins, whereas ROC analysis was used to evaluate the performance of the different proteins individually. Evaluation of performance utilizing two different cytokines to predict AF was attained via Linear Support Vector Machines.

Results: Although serum levels of the markers were higher in patients with CVD than healthy subjects, only GDF15 and resistin were significantly higher ($p < 0.05$) in patients with AF among the subpopulation who underwent heart surgery (p=0.029 and p=0.007, respectively). Moreover, these two proteins were some of the best predictors for AF when using them independently. GDF15 had a specificity of 0.95 (sensitivity= 0.42) for AF. When combining the GDF15 measurements with Resistin's, and classifying the patients by sex and presence of diabetes, specificity was 0.84 (sensitivity= 0.68).

Conclusions: GDF15 and resistin are two markers which could be helpful in stratifying risk for AF in patients with CVD. Yet, more research in terms of proteomics and investigation of possible molecular pathways implicated is required.