

IDENTIFICATION OF PEROXIREDOXIN-1 AS A NOVEL BIOMARKER OF ABDOMINAL AORTIC ANEURYSM

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OBJECTIVE: We have previously described a differential proteomic strategy using the conditioned media from human arterial tissues. In the search of novel biomarkers of Abdominal Aortic Aneurysm (AAA) progression, proteins released by the intraluminal thrombus (ILT) have been analyzed by a 2DE-based proteomic approach.

METHODS AND RESULTS: Different layers (luminal/abluminal) from the ILT of AAA were incubated in protein free medium and the secreted proteins were analyzed by 2D-DIGE/MS. Several proteins identified by MS that were differentially released by the ILT layers were involved in main AAA pathological mechanisms (proteolysis, oxidative stress and thrombosis). Among the identified proteins, peroxiredoxin-1 (PRX-1) was more released by luminal layer compared with the abluminal layer of the ILT, which was further validated by western blot and ELISA in a larger group of samples. In addition, we demonstrate not only increased circulating PRX-1 levels in serum from patients with AAA as compared to healthy subjects, but also positive correlation between PRX-1 and AAA diameter, plasmin-antiplasmin complexes and myeloperoxidase plasma levels. Finally, a prospective study revealed a positive correlation between PRX-1 serum levels and AAA growth.

CONCLUSIONS: Several proteins associated with AAA pathogenesis have been identified by a proteomic strategy in ILT conditioned medium. Among them, we found a novel AAA-related protein, PRX-1, whose serum levels are increased in AAA patients and correlates with AAA size and growth rate, suggesting its potential use as a biomarker for AAA evolution.