PROTEOMIC ANALYSIS OF PMN IDENTIFIES CATALASE AS A PROTEIN DOWNREGULATED IN AAA PATIENTS. POTENTIAL IMPLICATION OF OXIDATIVE STRESS IN THE EARLY PHASES OF AAA PROGRESSION

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OBJECTIVE: Polymorphonuclearneutrophils (PMNs) play a main role in the mechanisms involved in Abdominal Aortic Aneurysm (AAA) progression. We have analyzed PMNs isolated from AAA patients and healthy controls by a proteomic approach to identify proteins involved in AAA pathogenesis.

METHODS AND RESULTS: PMNs isolated from AAA patients and healthy controls were analyzed by 2D-DIGE. Several differentially expressed proteins were identified by mass spectrometry (MS), among them proteins involved in redox balance, such as catalase. Diminished catalase expression was observed in PMNs from AAA patients compared to controls, which was further validated by western-blot. In addition, we observed thatPMNs incubated with PMA displayed decreased catalase intracellular expression, with a concomitant increase in the conditioned media. Catalase expression was localized in the intraluminal thrombus (ILT) of AAA. Finally, increased catalase and hydrogen peroxide levels were observed in the conditioned media of ILT compared to both pathological and healthy media arteries.

CONCLUSIONS: Several proteins associated with AAA pathogenesis have been identified by a proteomic approach in PMNs. Among them, catalase expression and activity is decreased in PMNs from AAA patients further supporting an important role of oxidative stress in the early phases of AAA pathogenesis.