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IDENTIFICATION OF PROTEIN EXPRESSED BY AORTIC STENOSIS VALVES IN THE SEARCH FOR NOVEL BIOMARKERS

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Introduction: Until recently, aortic stenosis (AS) has been considered as a passive process secondary to calcium deposit in the aortic valves. However, lately several authors have pointed out that risk factors associated with the development of calcified AS in the elderly are similar to those of coronary artery disease. Furthermore, some studies have demonstrated that degenerative AS shares histological findings with atherosclerotic plaques which have led to the suggestion that calcified aortic valve disease is a chronic inflammatory process similar to atherosclerosis. Nevertheless, exist discordant data with this theory and it is necessary to study this pathology

The aim of this study is to obtain the aortic stenosis valves proteomic profile and in addition, the identification of new biomarker diagnosis and prognosis and/or therapeutic target.

Methods: AS valves obtained from necropsies (control samples) or by surgery patients were homogenized in extraction protein buffer. Both samples were analyzed using 2D-DIGE and LC-MS/MS. Furthermore, AS and control leaflets were studied by immunohistochemical (IH) and Western blot (WB) analysis, using a panel of monoclonal antibodies specific for inflammatory and cytoskeletal/contractile proteins. The proteomic results were confirmed by WB and IH.

Results: 10 patients underwent aortic valve replacement due to severe stenosis with calcification of the leaflets, were compared with 10 control valves obtained by necropsies. The result of 2D-DIGE analysis of the proteome of AS valves compared with control valves reveals the expression protein alteration in several proteins such as 27 Heat shockprotein, osteopontin, vimentin.

To confirm the proteomic results several proteins were analyzed by Western blot and IH techniques. Furthermore, we have characterized the cellular composition of degenerative aortic stenotic valves by IH. The fibrosa layer of AVL had a higher cellularity than spongiosa and ventricularis (elastic) and it was the principal layer which was damaged in the lesion.