

P11. Fine Characterization Of Aortic Valve Segments, Edges And Walls, Glycosaminoglycans And Their Modification With Aortic Stenosis

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OBJECTIVES: The levels and fine structure of natural complex glycosaminoglycans (GAGs), were determined in six segments of aortic valve (AV), edges (E) and walls (W) from noncoronary (NC), left coronary (LC) and right coronary (RC) leaflets, taken from 6 patients with aortic stenosis (AS) and compared with segments from 8 multiorgan donors.

METHODS: AV GAGs were analyzed by agarose gel electrophoresis, HPLC and fluorophore-assisted carbohydrate electrophoresis (FACE) to evaluate disaccharide patterns after treatment with chondroitinase ABC.

RESULTS: GAGs from the control group were determined in edge NC (ENC) and wall NC (WNC), edge LC (ELC) and wall LC (WLC), edge RC (ERC) and wall RC (WRC). Quite similar composition was found for the six AV segments apart a significant increase in the 4s/6 ratio of walls tissues in comparison with edges. In AS tissues, a strong significant increase of sulfated GAGs, i.e. CS/DS, was observed in all W segments with an increase in the charge density (R) values. This macromodification of GAG composition was followed by a microalteration of the structure of the sulfated polysaccharides with a significant increase of the 4s/6s ratio in all E tissues.

CONCLUSIONS: We assume that the amount and distribution of GAGs in different AV segments is related to different tension to which these tissues are subjected. Furthermore, macro- and micromodifications in composition and GAGs structure may be related to changes in mechanical functions consistent with alterations in tension and with an abnormal matrix microstructure able of influencing the hydration and of conditioning the mechanical weakness of pathological tissues.