Abstract: P481

The involvement of purinergic signaling of peripheral T-lymphocytes in aortic stenosis formation

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The idea of regulatory impact of purinergic signaling in the functioning of different type of cells and in this way in the pathogenesis of many diseases is now very popular and finds confirmations in different investigations.

The aim of the study was to compare subsets of peripheral T-lymphocytes and the expression on their surface ectonucleotidases CD39 and CD73 in patients with severe and mild aortic stenosis and to assume the involvement of T-cell immunity in valve calcification process.

We examined 33 patients with severe calcified aortic stenosis (AS) undergoing surgical heart valve replacement (Median of flow gradient was 48.3 (44.0;54.9)) (1 group), 47 patients with moderate AS (Median of flow gradient was 20.5 (14.0;28.0)) (2 group) and 42 healthy volunteers (3 group). Median age in the first group was 62.5 (57.0;66.0), in the second – 58.0 (45.0;66.0), in the third – 48.5 (43.0;53.0) years.

The relative number of peripheral naïve (N, CD45RA+CD62L+), central memory (CM, CD45RA-CD62L+), effector memory (EM, CD45RA-CD62L-) and terminally differentiated CD45RA-positive effector memory (TEMRA, CD45RA+CD62L-) CD45+CD3+CD4+ (Th), CD45+CD3+CD8+ (T cyt) and CD45+CD3+CD4+CD25bright (Treg) cells as well as the percentages of CD39- and CD73-positive cell within above-mentioned T cell subsets were measured using multicolor flow cytometry.

The levels of T cyt (p=0.04) and TEMRA T cyt (p=0.007) were increased in patients with severe stenosis comparing with mild stenosis. Meanwhile level of Naïve Treg (p=0.01) and TEMRA Treg (p<0.001) were decreased. Analyzing the total expression level of ectonucleotidases on T-cells we found that level of CD73+CD39- was decreased in patients with mild stenosis comparing with severe (p<0.001) and with healthy donors (p<0.001).

Changes in peripheral T-cells subpopulations in patients with severe aortic stenosis were more pronounced than in healthy donors and patients with moderate stenosis. Taking all the data together we propose that patients with severe stenosis have overexpressed proinflammatory status than the patients with moderate stenosis. Meanwhile decreased number of CD73+CD39- (anti-inflammatory) T-cells in the case of mild stenosis proves this statement and indicates the participation of purinergic signaling in regulation of T-cells inflammation.