Abstract: P129

CD4+CD28null T lymphocytes are associated with the development of atrial fibrillation after elective cardiac surgery

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Background: Post-operative atrial fibrillation (POAF) is postulated as a complex interaction of different pathogenic factors, suggesting inflammatory processes as a main trigger of this particular type of atrial fibrillation. Therefore, the study sought to assess the impact of cellular immunity on the development of POAF.

Methods: Fluorescein-activated cell sorting was performed in 129 patients undergoing elective cardia valve and/or coronary-artery-bypass-graft surgery.

Results: Comparing patients developing POAF to individuals free of POAF the fraction of CD4+CD28null T Lymphocytes was significantly higher in individuals developing POAF (11.1% [POAF] vs. 1.9% [non-POAF];p<0.001). Moreover, there was a strong correlation of CD4+CD28null cells and post-operative maximum C-reactive Protein values (r=0.216;p=0.041). CD4+CD28null cells were independently associated with the development of POAF with an adjusted odds ratio per one standard deviation of 3.91 (95% CI: 2.09-7.31;p<0.001). An area under the curve of 0.812 indicated a strong discriminatory power of CD4+CD28null cells for the occurrence of POAF. Compared to N-terminal Pro-Brain Natriuretic Peptide, the fraction of CD4+CD28null cells demonstrated an increased discriminatory power for the development of POAF (NRI: 87.9%, p<0.001; IDI: 30.9%, p<0.001). Interestingly, a pre-operative statin-therapy was associated with a lower fraction of CD4+CD28null cells (p<0.001) and showed an inverse association with the development of POAF (p<0.001).

Conclusion: CD4+CD28null cells proved to be predictive for the development of POAF after cardiac surgery. Our results potentially indicate an auto-immune impact of this preexisting, highly cytotoxic T cell subset in the pathogenesis of POAF, which might be modified via the anti-inflammatory potential of a pre-operative statin-therapy.