

Recent publications

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Inhibition of neutrophil activity improves cardiac function after cardiopulmonary bypass.

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The arterial in line application of the leukocyte inhibition module (LIM) in the cardiopulmonary bypass (CPB) limits overshooting leukocyte activity during cardiac surgery. We studied in a porcine model whether LIM may have beneficial effects on cardiac function after CPB. **METHODS:** German landrace pigs underwent CPB (60 min myocardial ischemia; 30 min reperfusion) without (group I; n = 6) or with LIM (group II; n = 6). The cardiac indices (CI) and cardiac function were analyzed pre and post CPB with a Swan-Ganz catheter and the cardiac function analyzer. Neutrophil labeling with technetium, scintigraphy, and histological analyses were done to track activated neutrophils within the organs. **RESULTS:** LIM prevented CPB-associated increase of neutrophil counts in peripheral blood. In group I, the CI significantly declined post CPB (post: 3.26 +/- 0.31; pre: 4.05 +/- 0.45 l/min/m²; p < 0.01). In group II, the CI was only slightly reduced (post: 3.86 +/- 0.49; pre 4.21 +/- 1.32 l/min/m²; p = 0.23). Post CPB, the intergroup difference showed significantly higher CI values in the LIM group (p < 0.05) which was in conjunction with higher pre-load independent endsystolic pressure volume relationship (ESPVR) values (group I: 1.57 +/- 0.18; group II: 1.93 +/- 0.16; p < 0.001). Moreover, the systemic vascular resistance and pulmonary vascular resistance were lower in the LIM group. LIM appeared to accelerate the sequestration of hyperactivated neutrophils in the spleen and to reduce neutrophil infiltration of heart and lung. **CONCLUSION:** Our data provides strong evidence that LIM improves perioperative hemodynamics and cardiac function after CPB by limiting neutrophil activity and inducing accelerated sequestration of neutrophils in the spleen.