

Systemic vascular cell adhesion molecule-1 predicts the occurrence of post-operative atrial fibrillation

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Abstract

Background: Post-operative atrial fibrillation occurs in 30% of patients after on-pump heart surgery and is associated to elevated inflammatory markers. We have evaluated if the systemic biomarkers of inflammation and endothelial damage, vascular cell adhesion molecule-1 (VCAM-1) and soluble thrombomodulin may help in identifying patients prone to development of post-operative atrial fibrillation. **Methods:** One hundred and forty-four patients in sinus rhythm submitted to elective coronary artery bypass surgery. Systemic inflammatory, oxidative stress and endothelial damage markers were measured at baseline and 72 h after surgery. During the procedure, a sample of the right atrial appendage was obtained for histochemistry. Electrocardiogram was monitored for 72 h after surgery for event adjudication. **Results:** 22% of the patients developed post-operative atrial fibrillation. Baseline systemic inflammatory markers did not differ between patients with or without post-operative atrial fibrillation. However, baseline plasma VCAM-1 and thrombomodulin levels were significantly higher in patients who developed postoperative atrial fibrillation. After adjustment for age, gender, comorbidities and concurrent medication, circulating VCAM-1 remained as an independent predictor for post-operative atrial fibrillation development. No association was observed between systemic plasma VCAM-1 and VCAM-1 tissue expression in the right atrial appendage. **Conclusions:** In patients undergoing coronary artery bypass surgery, elevated VCAM-1 levels predict a higher risk for post-operative atrial fibrillation. Plasma VCAM-1 elevation is not related to its expression in the right atria, suggesting that systemic endothelial damage rather than local changes pre-exist in patients who develop the arrhythmia..

Keywords

Atrial fibrillation, VCAM-1, Thrombomodulin, Coronary artery bypass surgery.