



STRAŻNICA

TOWARZYSTWO BIBLIJNE I TRAKTATOWE
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Marian Zembala, MD, PhD
Polish Journal of Cardiothoracic Surgery
Silesian Centre for Heart Disease

Dear Professor Zembala,

It was a real pleasure to attend the 2nd Polish-Ukrainian Cardiac Surgery Congress that took place on June 28-30 this year in Lublin. I appreciated very much the possibility of being there.

While listening to the session entitled *Surgical management of rhythm disturbances*, I recalled a report from Cleveland on effects of ICU RBC transfusion on incidence of new-onset atrial fibrillation after cardiac surgery.

The authors assumed that RBC transfusion increases the risk of atrial fibrillation in patients undergoing heart operations with cardiopulmonary bypass. The results they obtained permitted them to report: "Red blood cell transfusion in the ICU was identified as a risk factor associated with development of new-onset AF ($p < 0.0001$). Other risk factors included older age, prior history of AF, higher preoperative hematocrit, β -blocker withdrawal, longer aortic clamp time, valve surgery [as some CABGs included also valve procedures], and ICU inotropic usage". Comparison of the off- and on-pump groups in which CABG was performed revealed a similar odds ratio for RBC transfusion in ICU as a variable (1.22 and 1.25 respectively) [1].

The team suggested that the increased occurrence of AF after RBC transfusion may be due to "augmentation of the inflammatory process." The CPB and the surgical procedure themselves provoke the inflammatory response, which is further amplified by "direct infusion of inflammatory mediators... It is possible that the temporal confluence of early inflammatory stimuli associated with RBC transfusion in the ICU may result in enhanced leukocyte activation and atrial tissue injury." (Page 1754.) Interestingly, Bruins et al. described "a biphasic activation of the complement system and release of proinflammatory cytokines after cardiac surgery." The first phase occurred "in the operating room in response to the blood-bypass circuit exposure." The second would arrive several days after surgery and was associated with CRP and arrhythmias [2]. On the other hand, steroid administration in patients undergoing CABG reduced the incidence of postoperative AF, possibly due to inhibition of inflammatory mediators [3].

Identification of red cell transfusion as a risk factor contributing to AF development postoperatively may be helpful in developing strategies aimed at reducing complications after surgical treatment of rhythm disturbances. Avoiding allogeneic blood transfusion and developing alternative strategies to donor blood might be included among the options.

I appreciate very much your kind invitation to share these remarks.

Yours sincerely,
Tadeusz Wiwatowski
Department director

References

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2. Bruins P, te Velthuis H, Yazdanbakhsh AP, Jansen PG, van Hardevelt FW, de Beaumont EM, Wildevuur CR, Eijssman L, Trouwborst A, Hack CE. Activation of the complement system during and after cardiopulmonary bypass surgery: postsurgery activation involves C-reactive protein and is associated with postoperative arrhythmia. *Circulation* 1997; 96: 3542-3548.
3. Prasongsukarn K, Abel JG, Jamieson WR, Cheung A, Russell JA, Walley KR, Lichtenstein SV. The effects of steroids on the occurrence of postoperative atrial fibrillation after coronary artery bypass grafting surgery: a prospective randomized trial. *J Thorac Cardiovasc Surg* 2005; 130: 93-98.