

Role of antioxidants in preventing post-operative atrial fibrillation

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Madam, coronary artery disease (CAD) is taking an increasing toll in Pakistan with a greater prevalence in females than males and afflicting one in every five middle aged adults.¹ Such high prevalence of CAD among Pakistani population has resulted in greater need for cardiac surgeries. Post-operative atrial fibrillation (PAF) is the commonest adverse outcome of cardiac surgery and it paves way for further morbidities such as ischaemic stroke, systemic thromboembolism and myocardial infarction.² One in five to one in three patients undergoing cardiac surgery suffers from PAF and the treatment for post-operative atrial fibrillation includes beta-blockers, steroids and antioxidants.²

Just recently, Rodrigo et al suggested a novel regimen that involved use of antioxidants as the primary treatment option for post-operative atrial fibrillation and to overcome increased oxidative stress.³ A randomized control trial was conducted on a group of 203 patients scheduled for on-pump cardiac surgery to test the therapeutic efficacy of antioxidants for PAF. The results of the study showed that out of the 103 patients who received antioxidant supplements in the form of omega-3 (n-3) polyunsaturated fatty acids (2g/day), vitamin C (1g/day) and vitamin E (400 IU/day), only 10 (9.7%) patients suffered PAF, whereas 32 of 100 (32%) patients experienced PAF in the placebo group. The results also showed that patients, who had received placebo, presented with increased levels of biomarkers of inflammation and oxidative stress. The authors concluded

that use of antioxidant vitamins and polyunsaturated fatty acids is a cost effective, well-tolerated and safer means of increasing antioxidant potential along with reducing the occurrence of PAF post cardiac surgery.

A study conducted in Punjab Institute of Cardiology showed that the incidence of PAF after on-pump and off pump coronary bypass surgery was 33% and 22% respectively.⁴ This indicates that incidence of PAF is equally high in Pakistan as anywhere else in the world. Several other novel researches have also shown that antioxidants prove to be highly efficacious against oxidative stress after cardiac surgery.⁵ Therefore, we believe that the therapeutic policies pertaining to antioxidant vitamins and polyunsaturated fatty acids should be considered by Pakistani doctors to prevent morbidity and mortality associated with cardiac surgery, and for proper and effective management of PAF.

References

1. Jafar TH, Qadri Z, Chaturvedi N. Coronary artery disease epidemic in Pakistan: more electrocardiographic evidence of ischaemia in women than in men. *BMJ* 2008; 94: 408-13.
2. Kirchhof P, Lip GY, Van Gelder IC, Bax J, Hylek E, Kaab S, et al. Comprehensive risk reduction in patients with atrial fibrillation: emerging diagnostic and therapeutic options - a report from the 3rd Atrial Fibrillation Competence NETwork/European Heart Rhythm Association consensus conference. *Europace* 2012; 14: 8-27.
3. Rodrigo R, Korantzopoulos P, Cereceda M, Asenjo R, Zamorano J, Villalabeitia E, et al. A randomized controlled trial to prevent post-operative atrial fibrillation by antioxidant reinforcement. *J Am Coll Cardiol* 2013; 62: 1457-65.
4. Iqbal J, Ghaffar A, Shahbaz A, Sami W, Khan JS. Post-operative arrhythmias after Coronary artery bypass grafting: a comparison between 'off pump' and 'on pump' CABG. *J Ayub Med Coll Abbottabad* 2010; 22: 48-53.
5. Rodrigo R, Vinay J, Castillo R, Cereceda M, Asenjo R, Zamorano J, et al. Use of vitamins C and E as a prophylactic therapy to prevent postoperative atrial fibrillation. *Int J Cardiol* 2010; 138: 221-8.

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