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Evaluating the Effects of Melatonin on the Oxidative Stress and Duration of Atrial Fibrillation following Coronary Artery Bypass Graft Surgery: A Randomized Controlled Trial

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Objectives: Atrial Fibrillation (AF) is a common complication following Coronary artery bypass graft (CABG) Surgery, which may be due to oxidative stress during CABG and can lead to increase the length of hospital stay and the risk of morbidity and mortality. This study assessed the efficacy of melatonin in reducing necrosis and inflammation, in patients undergoing CABG.

Materials and Methods: One hundred and two patients were enrolled and finally seventy-six patients undergoing CABG surgery randomly assigned to melatonin group (n = 38, 12 mg sublingual melatonin the evening before and 1 hour before surgery, or the control group which did not receive Melatonin, n = 38). The samples were collected before and 24 hours after surgery. hs-CRP, CKMB, and cTnT levels were measured in all patients with the Elisa method.

Results: There was no significant difference in influencing variables among the groups at the baseline. The incidence of AF following CABG surgery was not statistically significant between the two groups, (p value = 0.71). However, the duration of AF (p value = 0.01), the levels of hs-CRP (p value = 0.001) and CK-MB (p value = 0.004) measured, 24 hours after surgery were significantly lower in the melatonin group. cTnT levels measured 24 hours post-CABG did not show any significant difference in both groups (p value = 0.52).

Conclusion: Our findings suggest that the administration of melatonin may help modulate oxidative stress, based on the reduction of the levels of hs-CRP, CK-MB, and the duration of AF following CABG surgery.

Keywords: Atrial fibrillation, coronary artery bypass graft surgery, melatonin, oxidative stress