Magnesium Sulfate for Prophylaxis against Postoperative Atrial Fibrillation after Isolated Cardiac Valve Replacement Surgery in Adult Patients with Rheumatic Heart Disease: A Randomized Controlled Trial

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Abstract:

Abstract Objectives: To evaluate the role of prophylactic magnesium sulfate administration in preventing postoperative atrial fibrillation (POAF), attenuating the inflammatory response and promoting myocardial protection after isolated cardiac valve replacement surgery in adult patients with rheumatic heart disease. Design: Prospective randomized, double-blind placebo-controlled trial. Methods: Sixty-four adult patients undergoing isolated cardiac valve replacement surgery were divided into two equal groups (32 patients in each). Patients in magnesium group (group M) received 2.5 gm of magnesium sulfate (dissolved in 100 mL of isotonic saline and infused over 2 h), twelve h preoperatively, within the first hour of ICU arrival, and on the 2nd and 3rd postoperative days (group M). Patients in the control group (group C) received a placebo of isotonic saline at the same time periods. Results: Prophylactic magnesium sulfate significantly decreased the incidence of POAF compared to the placebo group (P=0.005). White blood cell (WBC) count showed no significant difference between the two groups. C-reactive protein (CRP) level showed significant reduction during the 3rd, 4th, and 5th postoperative days in group M compared to group C (P=0.001, 0.001 & 0.012 respectively). Serum level of interleukin-6 (IL-6) showed a significant reduction on the 5th postoperative day in group M compared to group C (P=0.001). Both groups showed no significant differences in serum levels of troponin I during the study. Conclusion: Prophylactic use of magnesium sulfate in patients with rheumatic heart disease undergoing isolated cardiac valve replacement surgery can decrease the incidence of POAF. It may play a role in attenuating the inflammatory process associated with the use of cardiopulmonary bypass (CPB)

Keywords:

Magnesium sulfate Postoperative atrial fibrillation Cardiac valve surgery Rheumatic heart disease

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