RESULTS OF PREOPERATIVE INTRAORTIC BALLOON PUMP IN HIGH RISK CORONARY PATIENTS

Mohamad M. Saffan, MD*, Rizk A. Alazhary, MD**

Cardiothoracic Surgery Department*, Anesthesia Department**

Faculty of Medicine, Benha University

Abstract

Objective: The use of preoperative inta-aortic balloon pump (IABP) can reduce perioperative myocardial ischaemia and thus improve outcome in high risk patients undergoing coronary artery bypass operations with the use of cardiopulmonary bypass (CPB). The aim was to evaluate the efficacy of preoperative IABP treatment on perioperative and postoperative cardiac performance, mortality and morbidity, and the optimal timing for its insertion.

Patients and Methods: Between 2006 and 2011, 48 high risk patients with coronary artery disease underwent CABG. The mean age was 62±6 years. The patients presented with at least two or more of the following criteria: left main coronary artery stenosis was ≥70%, left ventricular ejection fraction was ≤40%, and unstable angina despite of medical treatment. Patients not fulfilling these high risk criteria were not included in the study as well as those with cardiogenic shock preoperatively. The patients were randomized into 3 groups, group 1 (n=11 patients) received IABP treatment for 24 hours before surgery, group 2 (n=16 patients) received IABP treatment for 1-2 hours before surgery, group 3 (n=21 patients) didn’t receive IABP preoperatively. Group 1 and 2 were chosen to evaluate the best timing for preoperative IABP.

Results: The mean CPB time was significantly shorter in groups 1 and 2 patients, 80±20 minutes (group 1), 85±22 minutes (group 2), versus 120±25 minutes in group 3 (P<0.001). Cardiac index was significantly higher in the 3 groups 5 minutes after CPB compared to values before CPB (P<0.05 in group 1, 2, and <0.001 in group 3) and it was significantly higher in group 1 and 2 as compared to group 3 (P<0.001). Measurements at 12 to 72 hours showed normalization in all 3 groups, though significantly better in group 1 and 2 compared to group 3 (P<0.001). In group 1 and 2, 4 patients (15%) experienced low cardiac output postoperatively (cardiac index <2L/min/m2) of them 3 patients required in addition to pharmacologic support, further support with IABP that could be successfully removed the following day in 2 survivors. In group 3, 14 patients (67%) had postoperative low cardiac output, which was significantly more frequently than observed in group 1 and 2 (P<0.05). Eight of these patients required IABP insertion and support for a significantly longer time period (4.5+ 2 days) in comparison to group 1 and 2 (P < 0.001). During the first 24 hours postoperatively patients in group 3 received a significantly higher dopamine doses (P<0.001). Also, the number of patients who received additional support with dobutamine and adrenaline during the first 24 hours was significantly higher in group 3 compared with group 1 and 2 (P <0.001 for dobutamine and <0.01 for adrenaline). There was one (9%) hospital mortality in group 1, no mortality in group 2, whereas 5 patients (24%) in
group 3 died which is a significantly higher mortality than the other two groups (P < 0.05). The mean length of stay required in the ICU was shorter in group 1 and 2 compared with group 3, (2.4 + 0.5 days versus 5.0 + 1.4 days P < 0.001). Group 1 one patient had better but non-significant improvement of their cardiac performance as compared with patients in group 2 (P>0.05). Conclusion: The use of preoperative IABP in high risk patients lowers hospital mortality and shortens the stay in ICU, due to improved cardiac performance. One day preoperative IABP treatment improves cardiac performance more than 1-2 h preoperative IABP treatment but does not significantly affect the outcome in terms of hospital mortality or postoperative morbidity.