

Effect of Anesthesia on Heme Oxygenase-1 Gene Promoter Polymorphism and inflammatory biomarkers in rheumatic heart patients undergoing valve replacement surgery .

Background: Cardiopulmonary bypass (CPB) attributed to inflammatory cytokines secretion that mediated the inflammatory response demonstrated during open heart surgery. Besides many factors, type of anesthesia affects the immune response in cardiac surgery. The aim of this study was to assess the effect of propofol anesthesia on hemodynamic modulation and inflammatory response. Heme oxygenase (HO) is a vital in the guard against oxidative stress and as a factor in an antiatherogenic mechanism. Contrasted with long (GT)_n repeats, short (GT)_n repeats in the human HO-1 gene promoter were exposed to have higher transcriptional activity in reply to oxidative stress.

Materials and methods: Thirty patients undergoing cardiac valve replacement surgeries were included in this study. Patients were allocated to receive propofol for maintenance of anesthesia. The blood samples for CRP, IL-6, IL-8, CD11, CD18, HIF-1 α and HO-1 were drawn just prior to the operation before the induction of anesthesia, 4 hours post-CPB, and 24 hours after baseline measurements. **Results:** Propofol reduced the plasma levels of CRP, IL-6, IL-8 and HIF-1 α at 24 hours post-CPB after initial marked increase at 4 hours post-CPB. Whereas, it increased the plasma levels of adhesions molecules (CD11 and CD18) at 24 hours post-CPB after initial decrease. The frequency distribution of HO-1 showed short (GT)_n repeat at 24 hours post-CPB compared to long (GT)_n repeat at baseline.

Conclusion: propofol provoked a protective effect against inflammatory response induced by CPB during cardiac surgery via reduction of inflammatory mediators, HIF-1 α and the length polymorphism in the HO-1 gene promoter is related to anesthesia in rheumatic heart patients .