471965 - THE EFFECTS OF NORMOTHERMIC VERSUS HYPOTHERMIC CARDIOPULMONARY BYPASS ON HEPATIC BLOOD FLOW

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Introduction: To explore Trans-esophageal Echo (TEE) as a monitoring device for hepatic blood flow during cardiac surgery and to correlate between the hepatic venous blood flow measurements and the liver function tests during normothermic and hypothermic cardiopulmonary bypass.

Methods: Local REB approval was obtained for this study. Forty patients scheduled for cardiac surgery were randomly divided into 2 groups: group 1 (G1) undergoing normothermic cardiopulmonary bypass (CPB) and group 2 (G2) undergoing hypothermic CPB. Serum AST, ALT, bilirubin and hyalurinic acid levels were measured before, during and 6 hours after the bypass. During these same phases, TEE was used to measure both cardiac index (CI) and middle hepatic vein blood flow.

Results: During CPB there were no significant differences in demographic data, AST, ALT, hyalurinic acid, or bilirubin levels between the 2 groups. There was, however, a significant increase ($P < 0.001$), in both groups, in serum hyalurinic acid levels during CPB in relation to the baseline and in G1 6 hours after bypass in relation to pre and intra bypass phases. The middle hepatic venous blood flow was significantly higher amongst G1 patients six hours following the procedure in relation to the pre and intra bypass phases, whereas G2 patients showed a significant decrease in middle hepatic venous flow during the bypass followed by a significant increase 6 hours after the procedure in relation to the baseline

Discussion: Hepatic venous blood flow is reduced significantly more during hypothermic bypass than during normothermic bypass. This may cause disturbances in sinusoidal endothelial cell (SEC) function. However, this change may be well tolerated by the healthy liver. Hepatic venous blood flow assessment by multiplane TEE correlated well with functional changes in sinusoidal endothelial cells in our study.

References: Gravlee GP. Update on cardiopulmonary bypass. Current opinion in Anesthesiology, 2001; 14:11-16