

Arginase Activity and Nitric Oxide Levels in Patients Undergoing Open Heart Surgery with Cardiopulmonary Bypass

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Abstract : Cardiovascular disease which is one of the most common health problems worldwide has crucial importance because of its' morbidity and mortality rates. Nitric oxide synthase and arginase use L-arginine as a substrate and produce nitric oxide (NO), citrulline and urea, ornithine respectively. Endothelial dysfunction is characterized by reduced bioavailability of vasodilator and anti-inflammatory molecule NO. The purpose of the study to assess endothelial function via arginase activity and NO levels in patients undergoing coronary artery bypass grafting (CABG) surgery. The study was conducted on 26 patients (14 male, 12 female) undergoing CABG surgery. Blood samples were collected from the subjects before surgery, after the termination and after 24 hours of the surgery. Arginase activity and NO levels measured in collected samples spectrophotometrically. Arginase activity decreased significantly in subjects after the termination of the surgery compared to before surgery data. 24 hours after the surgery there wasn't any significance in arginase activity as it compared to before surgery and after the termination of the surgery. On the other hand, NO levels increased significantly in the subject after the termination of the surgery. However there was no significant increase in NO levels after 24 hours of the surgery, but there was an insignificant increase compared to before surgery data. The results indicate that after the termination of the surgery vascular and endothelial function improved and after 24 hours of the surgery arginase activity and NO levels returned to normal.

Keywords : arginase, bypass, cardiopulmonary, nitric oxide

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