Reduced Number of G0D4+ Circulating Progenitor Cells Is a Strong Predictor of 1-year Cardiovascular Morbidity and Mortality in Chronic Hemodialysis Patients

Background: Endothelial dysfunction plays an important role in progression of cardiovascular disease (CVD). Decreased smooth muscle progenitor cell (SMPCs) levels are believed to be involved in maintenance of endothelial integrity, and are one cause of low SMPCs levels. In 2014, circulating progenitor cells (CPCs) were identified as a predictor of adverse cardiovascular outcomes in patients with chronic kidney disease (CKD).

Methods: The number of CPCs was determined in the baseline samples of 218 consecutive CKD patients. The percent of positive SMPCs was determined by flow cytometry using a APC-conjugated antibody against SMPCs (Chembio Ltd., Tauranga, New Zealand). The eGFR was calculated using the Chronic Kidney Disease Epidemiology Collaboration formula. CPCs were defined as CD34+ cells that were positive for the SMPCs marker.

Results: The number of CPCs was significantly lower in patients with CKD compared to healthy controls (p < 0.001). CPCs were the lowest in patients with stage 5 CKD, and increased significantly as the stage of CKD decreased. The number of CPCs was significantly lower in patients with eGFR < 60 mL/min/1.73 m² compared to patients with eGFR ≥ 60 mL/min/1.73 m² (p < 0.001). In a multivariate analysis, the number of CPCs was an independent predictor of adverse cardiovascular outcomes (p < 0.001). The number of CPCs was also an independent predictor of adverse cardiovascular outcomes in patients with eGFR < 60 mL/min/1.73 m² (p < 0.001).

Conclusion: The number of CPCs is a strong predictor of adverse cardiovascular outcomes in patients with CKD.

Effect of Viewing Leaded Group Volume Thresholds on Hospital Charges

For Coronaary Bypass Graft Sutuations

Background: The lead group, a private entity formed by representatives from 13 major health insurance companies, was established to provide a standard surgical procedure for coronary artery bypass graft (CABG) surgery. The group established a set of volume thresholds for hospital charges that were based on the surgical volume of each hospital. Hospitals that performed less than 100 CABGs in a year were considered low-volume hospitals, and those that performed more than 100 CABGs were considered high-volume hospitals. The lead group's criteria for determining high-volume hospitals were based on the volume of CABGs performed over the previous three years.

Methods: We used data from the Healthcare Cost and Utilization Project (HCUP) database for the years 2003 to 2005. We identified patients who underwent CABG surgery in hospitals that met the lead group's volume thresholds. We calculated hospital charges for each patient and compared charges between low-volume and high-volume hospitals.

Results: We analyzed data for 88,736 patients who underwent CABG surgery in hospitals that met the lead group's volume thresholds. The mean hospital charges were significantly higher in high-volume hospitals compared to low-volume hospitals (p < 0.001). The difference in hospital charges was greatest in hospitals with the lowest volume thresholds (p < 0.001). The lead group's volume thresholds were associated with a significant reduction in hospital charges, with a mean reduction of 21.4% (p < 0.001).

Conclusion: The lead group's volume thresholds are associated with a significant reduction in hospital charges for CABG surgery. This finding supports the lead group's efforts to improve the quality and efficiency of CABG surgery.