Abstract

OBJECTIVE: To determine whether creatinine clearance can be determined from a single plasma creatinine measurement in patients up to 5 days after cardiac surgery. DESIGN: Observational longitudinal study. SETTING: Cardiac intensive care unit in a tertiary referral center for cardiothoracic surgery. PATIENTS: Seventy-five patients (54 men, 21 women) scheduled for elective coronary artery surgery (93 postoperative patient days). INTERVENTIONS: Creatinine clearance measurement using a 4-hour urine collection and a single arterial blood sample. MEASUREMENTS AND MAIN RESULTS: There was significant agreement (Deming analysis $r = 0.63$-0.84, correlation $r = 0.76$-0.95, $p < 0.05$) between the predicted creatinine clearance and the measured creatinine clearance on each of the postoperative days. This was maintained even if the patients required inotrope or vasoconstrictor therapy, were receiving parenteral nutrition, or had changing renal function (Deming analysis $r = 0.67$-0.7; correlation $r = 0.8$-0.93, $p < 0.001$) but does not apply to patients with preexisting renal dysfunction (Deming analysis $r = 0.36$; correlation $r = 0.57$, $p = 0.002$). CONCLUSIONS: In cardiac surgical patients with normal preoperative renal function, predicted creatinine clearance is as reliable as measured creatinine clearance up to the fifth postoperative day.