Change of blood pressure and urine flow rate during cardiopulmonary bypass and its relation to postoperative renal function.

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摘要

Abstract

The relationship between the perfusion flow, the mean arterial pressure (MAP) and the urine flow rate during cardiopulmonary bypass (CPB) and the effect of oliguria developed during CPB on the postoperative renal dysfunction were studied prospectively in 69 open heart surgery patients. The MAP, the perfusion flow and the urine flow rate were monitored every five minutes during the first 45 minutes after the commencement of CPB and after the removal of the aortic cross clamp (AX). The serum creatinine (Cr), creatinine clearance (CCr) and blood urea nitrogen were measured before operation, as well as on the first, second and third postoperative days. The dosage of catecholamines and diuretics used and the duration of intubation and hospitalization in the intensive care unit were also recorded. The urine flow rate correlated with MAP much better than the perfusion flow during CPB ($r = 0.4768$, $p < 0.0001$). The urine flow rate and MAP decreased significantly after the initiation of CPB and after the release of the AX; however, oliguria developed only during the first 30 minutes of CPB. There were no differences in postoperative Cr, postoperative CCr, doses of catecholamines or diuretics, and the duration of intubation between patients with or without development of oliguria during CPB. Parameters measured during CPB could not predict CCr during the first three postoperative days. We conclude that it is MAP rather than perfusion flow which correlates with the urine flow rate during CPB. Periods of oliguria during CPB did not correlate with or help in the prediction of the development of postoperative renal dysfunction.