POSTOPERATIVE NEUROLOGICAL FUNCTION IN PATIENTS UNDERGOING ELECTIVE CORONARY ARTERY SURGERY: A PROSPECTIVE STUDY

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Subtle neurological dysfunction following elective coronary bypass surgery has been reported to occur in 48-61% of patients.[1,2] The current study was designed as part of a prospective assessment of neurological and psychometric outcomes as a function of differing cardiopulmonary bypass (CPB) techniques in patients undergoing elective coronary bypass procedures. Results of cognitive functioning are reported separately.

Methods: After institutional review board approval and obtaining written informed consent, 82 patients undergoing elective coronary artery bypass surgery using hypothermic (28°C) CPB, had neurological functioning assessed in 15 areas comprised of: Mentation (3), Cranial Nerves (2), Motor (4), Cerebellum/Sensation (3), and Gait/Reflexes (3). Patient performance was scored 0-3 for each area and a total baseline score was determined. Subsequent performance scores were compared with baseline scores to determine percent change. Patients were assessed within 24 hours preoperatively, and at 24 hours, 7 d, and 8 wk postoperatively.

Results: At 24 h 48.1% (total n=79) of patients demonstrated a decrease in total neurological score; at 7 d (mean = 7.8±2.1 d), 49.4% (total n=68) demonstrated a decrease; and at 8 wk (mean = 48.9±18 d) 33.7% (total n=56) of patients showed a decrease in overall neurological performance scores.

Discussion: In this study, 50% of patients showed a decrease in overall neurological function at 24 h and at 7 d, as determined by neurological scoring. In the majority of cases these were subtle effects that may not have been readily apparent on routine examination. At time of 8 wk follow-up, 33% of patients still exhibited some form of decreased neurological functioning. These data are qualitatively and quantitatively similar to those previously reported.[1,2]

References: 1. Shaw et al.Br Med J 291;1384-7,1985. 2. Carella et al:Acta Neurol Scand 77:158-63,1988.

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TITLE: DO CHANGES IN MYOCARDIAL WALL-THICKENING FRACTIONS REFLECT CHANGES IN GLOBAL FUNCTIONS?

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Measurement of myocardial wall-thickening fraction (TF) has been proposed as an assessment of myocardial function following cardiac surgery.[1] We have undertaken to validate this concept by comparing TF against cardiac output (CO) and dP/dt. All patients gave written informed consent to participate following approval of the study by the IRB.

Following the completion of the proximal grafts but prior to the separation from cardiopulmonary bypass, eight patients had a wall-thickness probe sewn onto the anterior surface of the myocardium in the distribution of the LAD coronary artery. In addition, four patients had a Millar 6 Fr microtranducer tipped catheter inserted through the right superior pulmonary vein and threaded across the mitral valve into the left ventricle. All patients were monitored for 36 hours following their return to the ICU. TF were derived in the fashion previously described[2] and recorded hourly on a Gould eight channel recorder along with the left ventricular pressure trace, dP/dt, radial arterial pressures (SAP and DAP) and ECG tracings. All other parameters (PCWP, LVSW, CO SVR, MAP) were recorded every four hours.

TABLE 1

	TF	dP/dt	MAP	CO	SVR	PCWP	LVSW
TF	1						
dP/dt	.32*	1					
MAP	.25*	.53*	1				
CO	-.03	.17	-.37	1			
SVR	.2	-.19	.51*	-.92*	1		
PCWP	-.15*	-.03	.14	.24*	.00	1	
LVSW	-.09	.66*	.24*	.71*	-.65*	.2	1

*p < .05 regression analysis

The correlation matrix for TF, dP/dt, MAP, CO, SVR, PCWP and LVSW is displayed in table 1. In addition, in three patients we recorded a decrease in TF associated with ECG evidence of ischemia and miminal changes in global functions.

Our results indicate that a regional measure of contractility (TF) is weakly correlated with indicators of global (CO, dP/dt) cardiac function in the patient with regional arterial disease. Also of interest is the correlation between PCWP and TF. We do not know if they are causally related, but this may imply that low TF values are an indicator of elevated PCWP. Our experience provides new evidence that monitoring of TF after coronary artery surgery is of interest in the patient at risk for postoperative ischemia.

References
1. Anesthesiology 71(3A): A193, 1989.
2. Am J Physiol 251:H1045-H1055, 1986.