TITLE: THE LIMITED PREDICTIVE VALUE OF DIPYRIDAMOLE THALLIUM IMAGING IN NONCARDIAC SURGERY PATIENTS

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Dipyridamole thallium imaging (DTI) is frequently used to assess the presence of significant coronary artery disease in patients who are unable to exercise. Postoperative cardiac events have been reported to occur much more frequently in vascular surgery patients with redistribution on preoperative DTI.(1,2) On the basis of that data, DTI is widely used in the preoperative evaluation and perioperative management of noncardiac surgery patients.(3) Because we suspected that information obtained from DTI has significantly changed the selection and surgical treatment of high risk patients, we investigated the predictive value of DTI in patients who came to noncardiac surgery.

METHODS: During a six month period, we identified 19 patients at increased risk for silent myocardial ischemia, 12 who had vascular surgery and 7 who had nonvascular surgery, who were evaluated by preoperative intravenous DTI, and then (with informed consent) had ambulatory ECG monitoring (SpaceLabs ambulatory ECG 90205/FT2000 analysis system) and observation from the day prior to surgery until 3 days postop. A postoperative cardiac event was defined as the occurrence of a myocardial infarction, ischemic pulmonary edema, or unstable angina.

RESULTS: (Table) We observed 6 cardiac events in 9 patients without DTI redistribution, and no events in the 8 patients with redistribution on DTI. The presence of redistribution on DTI, which has been previously regarded as a predictor of high cardiac risk, was not predictive of an untoward perioperative cardiac event. Paradoxically, the lack of redistribution was a significant predictor for a postoperative cardiac event ($p < 0.05$ by Fisher's exact test)

DISCUSSION: Selection bias is clearly involved in the decisions made by the clinicians regarding who had DTI, whether that patient would present to surgery, and the management therein. The predictive value of DTI in our series is not only obscured by these biases, but is opposite to previously published reports. However, those patients who come to anesthesia reflect the population in whom these biases are present. Therefore, we believe that those patients without redistribution on DTI are at increased risk when the test is applied to noncardiac surgical patients in whom the *a priori* presence of cardiac disease is likely.(4)

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1. NEJM 312:389-394, 1985
2. JACC 9:269-276, 1987
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4. Clin Cardiol 13:14-18, 1990

Preoperative DTI result vs. Postoperative Cardiac Outcome (N = 19)

DTI	N	cardiac event present	cardiac event absent	Predictive Value
(-) redistrib	11	6	5	0.55
(+) redistrib	8	0	8	0.0

TITLE: THE PREDICTIVE VALUE OF PREOPERATIVE SILENT ISCHEMIA FOR POSTOPERATIVE ISCHEMIC CARDIAC EVENTS IN VASCULAR AND NONVASCULAR SURGERY PATIENTS

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In elderly patients, silent ischemia during daily life is a predictor of future cardiac events. (1) Although silent myocardial ischemia has been shown to be predictive of future cardiac events in vascular surgical patients, there currently is no evaluation of its predictive value in nonvascular surgical patients.(2,3) Therefore, we compared *VASCULAR* surgery patients with patients who were having *NONVASCULAR* surgery, and who had increased risk of cardiac disease, to determine whether the occurrence of preoperative silent myocardial ischemia is predictive of postoperative cardiac events (myocardial infarction, ischemic pulmonary edema, or unstable angina).

METHODS: After informed consent, 114 patients with either known, or risk factors for, coronary artery disease, were monitored (SpaceLabs ambulatory ECG 90205/FT2000 analysis system) from the evening prior to elective surgery through the third postoperative day(~80 hrs). Patients were excluded if there were abnormalities on a preoperative ECG that interfered with the diagnosis of myocardial ischemia.

RESULTS: Preoperative ischemia was seen in 8/35 patients who had vascular surgery (23%) and in 8/79 patients who had nonvascular surgery (10%). Postoperative events occurred in each group in 3/8 patients with preoperative ischemia. In the absence of preoperative ischemia, cardiac events occurred in 4/27 vascular patients, and in 1/71 patients in the nonvascular group.

DISCUSSION: The data for nonvascular patients demonstrate that the negative predictive value of preoperative ischemia is excellent, and is less reliable in the vascular surgery group. The positive predictive value of preoperative ischemia for postoperative cardiac events was the same in both the vascular and nonvascular groups, but was not as robust as the negative predictive value.

Preoperative Ischemia vs. Postoperative Events (N = 114)

Preoperative Ischemia		present	absent
Vascular pts: (N=35)	event	3	4
	no event	5	23
Nonvascular pts: (N=79)	event	3	1
	no event	5	70

Predictive value of preoperative ischemia for postoperative cardiac events

	Positive predictor	Negative predictor
Vascular pts	0.38	0.85
Nonvascular	0.38	0.99

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3. J Vasc Surg 10:617-625, 1989