26452 - WITHDRAWAL OF BETA BLOCKERS AND THE RISKS OF PERI-OPERATIVE MI

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BACKGROUND: Peri-operative beta-blockade is being increasingly scrutinized. Giles et al(1) suggest that patients on chronic beta-blockers coming for surgery are at increased risk of peri-operative MI. Lindenauer showed that patients at highest risk for morbidity were protected by beta-blockers but low risk patients and diabetics may be harmed by peri-operative beta blockade(2).

METHODS: Following Research Ethic Board approval we surveyed data from a prospectively collected a database of 2996 consecutive patients who underwent non-cardiac surgery between May 2003 and July 2004. Exclusion criteria included day surgery, length of stay less than 24 hours, lung and liver transplants. The unadjusted relationship between the cardiac risk factors (history of CAD, CHF, diabetes, CVA, elevated creatinine) anemia, blood transfusions, beta blockers, postoperative MI were analyzed using descriptive statistics and logistic regression. Beta blocker therapy was divided into 3 classes; chronic, acute (started within 2 days of surgery), withdrawn (on beta blockers at the time of preoperative assessment but none given postoperatively). Postoperative MI was defined as a troponin I of greater than 0.70 ng/ml. Troponin results were correlated with EKG changes, symptoms and new regional wall motion abnormalities. An independent and blinded cardiologist confirmed all diagnoses of a new MI. Statistical analyses were performed using SAS Version 8.20. Statistical significance was defined by $P \leq 0.05$.

RESULTS: In unadjusted analyses, RCRI, age, gender, preoperative anemia, blood transfusions, beta blocker therapy, lipid lowering therapy were associated with MI. In multiple logistic regression analyses, age (OR 1.75 95%CI 1.13-2.71), gender (OR .76 95% CI 1.10-2.81), history of coronary disease (OR 2.67 95% CI 1.57-4.53), congestive heart failure (OR 3.89 95% CI 1.63-9.28), high risk surgery (OR 1.58 95% CI 1.01-2.47), any transfusion of red cells (OR 2.51 95%CI 1.52-4.13), withdrawal of beta blocker therapy (OR 2.95 95% CI 1.50-4.78) were independently associated with MI. All predictor variables that were included in the final model were also retained in > 75% of 100 bootstrap samples. The final model had good discrimination (c-statistic 0.83; 95% CI 0.80 – 0.86) and calibration (Hosmer-Lemeshow statistic 4.8; $P = 0.35$)

The factors associated with beta-blocker therapy are seen in the Table.

CONCLUSIONS: We have identified beta-blockers as an important factor associated with peri-operative myocardial infarction. Withdrawal of beta blockers resulted in a three fold increase in the odds of MI. Continuation of chronically administered beta blockers is not optional but fundamental to good patient management.

REFERENCES: 1. Anaesthesia 2004; 59(6):574-583 2. N Engl J Med 2005; 353(4):349-361

The factors associated with beta blocker therapy:

	No Beta Blockers N (%)	Chronic Beta Blockers N (%)	Beta Blockers Withdrawn N (%)	Acute Peri-operative Beta blockade N (%)	p Value
	n= 2277	n=281	n=185	n=226	
<i>Revised Cardiac Risk Index</i>					
Class 0	956 (42.0%)	72 (25.6%)	34 (18.3%)	45 (19.3%)	<.0001
Class 1	1114 (48%)	113 (40.2%)	96 (51.9%)	103 (45.6%)	
Class 2	164 (7.2%)	64 (22.8%)	42 (22.7%)	57 (25.2%)	
Class 3 or greater	33 (1.5%)	32 (11.4%)	13 (7.0%)	21 (9.3%)	
<i>Hematology</i>					
Anemia (Hgb <90 mg/dl)	196 (9.6%)	44 (15.6%)	24 (12.9%)	50 (22.1%)	<.0001
<i>Drug Rx</i>					
Statins	144 (6.3%)	64 (22.8%)	45 (24.3%)	56 (24.7%)	<.0001
<i>Outcomes</i>					
Myocardial Infarction	50 (2.2%)	11(3.9%)	21 (11.4%)	16 (7.1%)	<.0001