Title: PREOPERATIVE PREDICTIVE FACTORS OF MYOCARDIAL ISCHEMIA PRIOR TO BYPASS IN CABG PATIENTS.

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Introduction. Prebypass myocardial ischemia in patients undergoing coronary artery bypass graft surgery (CABG) has been reported to be a predictive factor of postoperative myocardial infarction when detected by enzymatic increase[1]. This prospective study was carried out to evaluate preoperative predictive factors of occurrence of prebypass myocardial ischemia.

Methods. 35 consecutive patients undergoing CABG were studied after institutional approval and informed consent. Patients with complete left bundle branch block were excluded. All patients received their usual antianginals and lorazepam 2.5 to 5 mg as a premedication. A radial artery and a Swan-Ganz or a central venous catheters were inserted prior to induction. Anesthesia was carried out with high dose opioid (fentanyl or alfentanil), isoflurane was associated if necessary. Hemodynamic measurements and ST segment analysis were performed using a Marquette 7010 surgical monitor (MQ), all parameters were recorded every minute using MQ connected to a PC computer. MQ measured ST segment variability from baseline (0.04 seconds before the start of the QRS complex) at a point 60 msec after the J point, in three leads, I, II and V5. EKG ischemia was defined as: ST elevation or ST segment downsloping $\geq$ 1 mm compared with the resting recording and lasting at least 1 minute. Results are expressed as mean ± SD. Patients were separated into 2 groups for statistical analysis according to the occurence or not of a prebypass ischemic episode. Tests used were chi-square, Mann-Whitney U and Fischer's exact tests when appropriate. $P < 0.05$ was considered as significant.

Results. All patients were male, mean age was 57.3 ± 9.1 years. 3516 sets of data were recorded and 6 ischemic episodes (all ST depression) occurred in 6 different patients. They lasted 13.7 ± 9.2 minutes. History of myocardial infarction (20 patients), preoperative unstable angina (11 patients), hypertension (12 patients) were not associated with an ischemic event. Type of preoperative treatment (beta and calcium blockers, nitrates, conversion enzyme inhibitor especially) was not a predictive factor of ischemic episode. Neither prebypass hypertension nor prebypass hypotension episodes were associated with occurence of ischemic episode.
Preinduction systolic arterial pressure was higher in the group of patients who experienced a prebypass ischemic episode ($p < 0.05$). Preinduction PRQ was not a predictive factor.
All ischemic events were associated with a PRQ inferior to the preinduction one ($p < 0.05$) and was inferior to 1 in 3 cases, equal to 1 in one case. Two out of the six patients who presented a prebypass myocardial ischemic episode (one with a PRQ < 1) suffered a postoperative myocardial infarction (EKG and enzymatic elevation), none among the other patients ($p < 0.05$).

Comments. In these patients, the only preoperative parameter related to the occurence of a prebypass ischemic episode was the level of the systolic arterial pressure. Occurence of a prebypass ischemic episode is a predicting factor of postoperative myocardial infarction.

Reference.
1. Cheng et al. Anesthesiology,, 71:818-826, 1989

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Title: ETOMIDATE MODIFIES HEMODYNAMIC RESPONSE TO HIGH DOSE FENTANYL INDUCTION IN PATIENTS WITH POOR LEFT VENTRICULAR FUNCTION. A RANDOMIZED STUDY.

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Etomidate (E) associated with low dose fentanyl (F) is known to produce minimal alteration of hemodynamics[1]. E could avoid some side effects of high dose fentanyl induction, technique advocated in patients with poor left ventricular function. Our study compares the hemodynamic response to induction using F with or without E.

24 patients with a poor left ventricular function (ejection fraction < 0.40) scheduled for coronary or valvular surgery, were randomly assigned into 2 groups after institutional approval and informed consent. In both groups premedication was carried out with lorazepam 2.5 to 5 mg p.o. In group E, patients received 250 mcg of F, 0.3 mg/kg of E and then 30 mcg/kg of F during 5 minutes. Patients of group F received only this last infusion. Vecuronium was used for myorelaxation. Hemodynamic parameters (Swan-Ganz catheter) were recorded before anesthesia (T0), after induction (T1), intubation (T2) and 10 minutes later (T3). I.V. infusions were less than 500 ml lactated Ringer's solution. Results are expressed as mean ± SD and statistical analysis used chi-square test, ANOVA and Student t-test when appropriate.

Group F (n=12) and group E (n=12) did not differ with respect to age, weight, cardiac disease (angina n=3 in group E vs 3 in group F, aortic stenosis n=5 vs 3, aortic insufficiency n=3 vs 4, mitral insufficiency n=1 vs 2). Loss of consciousness occurred within 177 ± 56 sec. in group F and 55 ± 16 sec. in group E ($p<0.001$). No myoclonus occured in group E.

Heart rate (HR), cardiac index (CI), mean arterial pressure (MAP), pulmonary capillary wedge pressure (PCWP) and systemic vascular resistance (SVR) did not differ at T0 (TABLE 1). At induction, MAP decreased significantly in both groups returning to control value after intubation (T2), but remained similar in both groups. Decrease in MAP was associated with a lower CI in group E compared to F from T1 to T3, but no difference was observed with control value. SVR in both groups remained similar to control values.

		HR b/min	MAP mmHg	PCWP mmHg	CI $L/min/m^2$	SVR $dyn.sec/cm^5$
T0	F	66±15	85±13	14± 7	2.6±0.5	1399± 283
	E	*76±17*	*90±13*	*19± 5*	*2.3±0.6*	*1788± 524*
T1	F	74±18	79±20##	15± 5	2.5±0.4	1274± 317
	E	*71±16*	*66±13##*	*14± 8*	*2.0±0.4@*	*1488± 497*
T2	F	84±21	92±15	18±10	2.6±0.9	1517± 514
	E	*76±18*	*80±16*	*17±11*	*2.1±0.4@*	*1667± 399*
T3	F	78±20	82±20	15± 9	2.4±0.6	1445± 531
	E	*73±17*	*80±22*	*18±12*	*1.9±0.4@*	*1892±1069@*

\# $p < 0.05$ ## $p < 0.01$ vs T0
@ $p < 0.05$ @@ $p < 0.01$ E vs F

When associated with high dose F in patients with poor left venticular function, etomidate easied induction by shortening the time to loss of consciousness but induced a significant decrease in CI compared to induction with F alone.

1. Stockham RJ et al. J Cardiothorac Anesth, I, n°1, 19-23, 1987