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TITLE: SEVERITY OF SURGERY AND GLYCEMIC CONTROL IN DIABETIC PATIENTS.
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Most insulin therapy protocols during the operative period give a constant amount of insulin regardless of the severity of surgery. The aim of this prospective and randomized study was to evaluate, in diabetic patients, glycemic control and needs of insulin with two different insulin therapy protocols as a function of severity of surgery.

After institutional approval and informed consent were obtained, 56 adult diabetics (25 Non-Insulin-dependent Diabetes Mellitus and 31 Insulin-dependent Diabetes Mellitus) undergoing general anesthesia for elective operative procedures before 10 a.m. were studied. We compare two degrees of severity: minor surgery (group A: vitrectomy; n=31) and major surgery (group B: gastrectomy, colectomy, hip replacement; n=25). By randomization insulin was supplied either by continuous infusion at a rate of 1.25 U per hour (n=27) or by direct IV (DIV) bolus of 10 units (n=29) every two hours. Glucose supply was 125 ml/h of 5 % glucose. If intraoperative blood glucose (BG) exceeded 11 mmol/l an additional five units bolus was administered. Patients with preoperative glucose imbalance (BG > 16.5 mmol/l or < 3.3 mmol/l) were excluded. The study began just before induction and finished two hours after the end of surgery. BG levels were measured every 15 minutes. Serum lactates, pyruvates, ketone bodies, C peptide, counterregulatory hormones were measured on three occasions: before induction (S1), midway through surgery (S2) and in the recovery period (S3). Comparisons were performed using student's t-test and correlations were made using the least squares method (p<0.05). Values are mean ± SEM.

For a similar amount of insulin per hour, mean BG values were increased during major surgery but were always lower than 11 mmol/l whatever the insulin therapy protocol used : continuous infusion or DIV bolus. There were no statistical significant differences for the other biological data except the increase in norepinephrine levels during major surgery. There was a statistically significant interrelationship between blood glucose and norepinephrine levels (n=0.82 - p<0.001)

	S1	S2	S3		S E V E R I T Y
BGL mmol/l	8.3±0.5 8.7±0.7	7.6±0.3 9.4±0.4 *	6.8±0.2 8.9±0.4 **	A B	
NE nmol/l	1.7±0.1 1.8±0.1	1.5±0.1 4.8±0.6 *	2.4±0.2 5.7±0.9 **	A B	

Table : Mean blood glucose levels (BGL) and norepinephrine levels (NE) at S 1, S 2, S 3
* p<0.01, ** p<0.001

We conclude that during major surgery there is an increase of mean blood glucose, probably secondary to increases of norepinephrine, but mean BG levels are always lower than 11 mmol/l. So it is not necessary to modify insulin therapy supply as a function of severity of surgery when insulin is given at a rate of 1.25 U/h.

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Title: A COMPARISON OF CENTRAL AND PERIPHERAL INTRAARTERIAL BLOOD PRESSURE MEASUREMENTS IN ICU PATIENTS RECEIVING INFUSIONS OF VASOCONSTRICTIVE AGENTS
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Introduction: Patients undergoing surgery with cardiopulmonary bypass have been shown to have femoral mean arterial pressures (MAP) higher than their radial mean arterial pressures; the opposite of what one would normally expect. This study was done to determine whether similar MAP gradients occur in normothermic ICU patients requiring vasopressor infusions, and whether there is a relationship between these gradients and vasopressor dose, vasodilators, and other hemodynamic parameters.

Methods: 10 adult ICU patients, ages 18-78, with hypotension requiring intraarterial pressure monitoring and vasopressor therapy (dopamine, epinephrine, neosynephrine, and/or norepinephrine) were studied prospectively after institutional approval and informed consent. Each patient had a femoral and radial artery catheter placed, each connected to a quartz transducer with 76 cm of high-pressure tubing. The same transducers were used for each patient, tested for static and dynamic response throughout the study, and zeroed prior to each data collection. Data sets were collected at 30-60 minute intervals over a 6-12 hour period for 3 consecutive days. Each data set consisted of: simultaneous femoral and radial artery pressures; brachial artery cuff pressures; blood and forearm skin temperatures; ECG; PCWP; CVP; cardiac output ; and the doses of all vasoactive drugs administered.

Results: 5/10 (50%) patients had clinically significant gradients of ≥5 mmHg ≥25 % (26-100%) of the time. 2/10 (20%) patients had gradients ≥10mmHg during the course of the study. The results of the Chi-squared analysis (see fig.) showed an increased incidence of the gradient in the presence of vasopressors, and a decreased incidence of the gradient when vasopressors were given with low dose dopamine or other vasodilators (P<.0001). Individual linear regression analyses comparing the F-R MAP gradient to the femoral artery pressure; the brachial cuff-radial artery MAP gradient; the blood-skin temperature gradient; the PCWP, CVP, CO, and SVR reached statistical significance (P<.05) in some patients. However, these findings did not identify the patients with frequent or large F-R MAP gradients.

Discussion: This study demonstrates that the incidence of femoral-radial MAP gradients in normothermic ICU patients on vasopressors is comparable to that seen in hypothermic patients undergoing cardiopulmonary bypass. Although clinically significant relationships existed between the gradient and systemic vasodilatation in some patients, these patients did not have a higher incidence of a gradient overall. The increased incidence of F-R MAP gradients in patients receiving vasopressors may indicate the need for femoral rather than radial arterial pressure monitoring.

Incidence of Femoral-Radial MAP Gradients of ≥ 5 mmHg

