Title: DISSOCIATION BETWEEN RENAL HEMODYNAMIC AND FUNCTIONAL EFFECTS OF TITRATED DOSES OF DOPAMINE IN HUMAN KIDNEY TRANSPLANT.

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INTRODUCTION: Despite the absence of conclusive clinical studies, Dopamine (DA) and Furosemide are commonly administered in the perioperative course of kidney transplantation to achieve optimal postoperative renal function which is a prognostic factor for graft survival (1). Low dose DA in native kidney has been demonstrated to produce renal vasodilation, increased diuresis and natriuresis (2). Immediatly after transplantation, the renal response to DA is unknown. This study was designed : -1- To evaluate with Doppler implantable microprobe (3) the renal hemodynamic dose-effect, and -2- To appreciate a potential beneficial effect on renal fuction, of titrated DA infusion.

MATERIAL AND METHODS: 7 Patients (35±9 yrs SD) scheduled for cadaveric renal transplantation were studied after informed consent and ethical committee approval. Following parameters were recorded: MAP (Dinamap); CO,PAP,RAP (Swan-Ganz catheter); Mean Renal Blood Flow (RBF) via an 8 MHZ Pulsed Doppler implantable microprobe sutured on the renal artery (3); Renal vascular resistances (RVR); Urine Output: (Vu) (intravesical catheter); Sodium Excretion (Na.EX=NaU.Vu); Creatinine Clearance (Cr.Cl)

PROTOCOL: 4 sets of measurements were performed post-operatively under mechanical ventilation and continuous Fentanyl infusion after 20 min of steady state in each situation: Control (C); DA_3,DA_5,DA_{10} under respectively 3, 5, 10 mcg.Kg^{-1}.min^{-1}Dopamine.DA infusion rate was not increased when MAP reached 150 mmHg. Statistical analysis was performed using a 2 way ANOVA and a Wilcoxon paired test. $p<0.05$ was considered significant.

RESULTS are summarized in Table 1.(Mean±SD). One patient 's MAP rose to 143 mmHg at DA_3 and DA infusion was stopped.

DISCUSSION: Whatever the rate of infusion , DA did not induce any RBF and RVR variation despite normovolemic status and classical systemic hemodynamic modifications. Vu and Na.EX increased significantly in relation to MAP increase (r=0.56 ; p=0.0028) and to DA infusion rate. Since DA did not modify renal hemodynamic, renal function indices improved, suggesting that recent transplanted kidney functions are pressure dependent.

TABLE 1 : Mean systemic , renal hemodynamic and functional parameters under 0 (C) , 3 (DA_3), 5 (DA_5), and 10 (DA_{10}) mcg.Kg^{-1}.min^{-1} Dopamine infusion.

	C	DA 3	DA 5	DA 10	ANOVA
n=	*7*	*7*	*6*	*6*	
MAP *mm.Hg*	99.7±12.4	108.6±17.5	116.8±9.7*	133.5±8*¶§	p=0.0007
CO *L/min*	7.3±2.1	8.4±2.6*	8.6±2.4	10.4±2.8*	p=0.02
HR *bpm*	68±9	69±16	66±17	78±23	NS
PAP *mm.Hg*	14.7±2	17.1±2*	18.5±3*	19.7±1*¶	p=0.0014
RAP *mm.Hg*	6.3±2	7.6±3	6.7±3	6.3±4	NS
RBF *ml/min*	430±180	460±170	490±180	480±140	NS
RVR *U.I.*	280±140	270±130	270±110	290±70	NS
Vu *ml/min*	9.9±5.8	14.2±6.3	19.5±9.1*	23.8±10.3*¶	p=0.024
Nau.Vu *mmol/min*	1.2±0.8	1.6±0.9	2.3±1.2	3±1.4*¶	p=0.0344
Cr.Cl *ml/min*	21±10	29±11	34±14	37±15	NS

$p<0.05$; * vs C, ¶ vs DA3, §vs DA5

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TITLE: BREATHING CIRCUIT RELATED RESPIRATORY EFFORT IN INFANTS RECOVERING FROM RESPIRATORY FAILURE

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We compared cardiopulmonary function in 12 infants recovering from respiratory failure, during spontaneous breathing with three continuous-flow breathing circuits: The Babybird, the Newport E100i, and the Vital Signs circuit. The primary difference between the circuits was the flow-resistance of the exhalation valve. The data were anlyzed using a repeated-measures analysis of variance.

Ventilation, gas exchange, and circulatory function were not altered significantly by changing the breathing circuit. Inspiratory airway and esophageal pressure fluctuations were largest (3.3±0.8 and 9.7±3.2 cmH_2O; mean±SD) during breathing with the Babybird that had a flow-resistor exhalation valve, and smallest (0.9±0.7 and 7.1±2.5 cmH_2O) during breathing with the Vital Signs circuit equipped with a threshold resistor valve ($p<0.001$). The airway pressure fluctuation recorded during breathing with the flow-resistor circuit increased with weight and exceeded 2 cmH_2O in all patients weighing more than 4.5 kg (Figure).

Differences in airway pressure fluctuations in this study reflect variable extrinsic respiratory work associated with different breathing circuits. The characteristics of the breathing circuit are an essential determinant of the patient's total respiratory work and may sometimes determine the outcome of attempted weaning from ventilatory support. We emphasize the need to evaluate pediatric respiratory circuits to detect excessive extrinsic respiratory work.

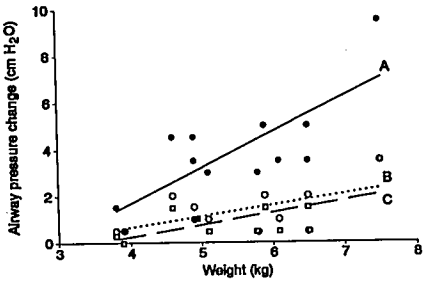

Figure. Plot of weight and amplitude of airway pressure fluctuation during breathing with the Babybird (A, dots), the Newport E100i (B, circles), and the Vital Signs circuit (C, boxes).