

## SCA 34

**PERIOPERATIVE USE OF NESIRITIDE IN ADULT CARDIAC SURGERY**

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**Introduction:** Nesiritide, a novel B-natriuretic peptide is FDA approved for the treatment of congestive heart failure. Because of its pulmonary, coronary, and renal vasodilating as well as lusitropic effects, it may be useful in cardiac surgery and anesthesia perioperatively. Results of our initial patient series are presented.

**Methods:** Nesiritide was administered to 13 adult cardiac surgical patients perioperatively for diastolic dysfunction (4), pulmonary hypertension (HTN,2), LVAD(2), OPCAB + renal insufficiency (2), pre-existing (2) and acute (1) renal insufficiency. In all patients nesiritide was bolused with 2 ug/kg IV over 20 minutes followed by an infusion of 0.01 ug/kg/min. **RESULTS:** A. Patients with diastolic dysfunction underwent CABG(2), AVR/MAZE(1) and AVR/CABG(1). All had normal LV function by TEE and low cardiac output (CO) after cardio-pulmonary bypass (CPB), unresponsive to fluids + epinephrine (1-2ug/min)(3) and epinephrine (1-2ug/min)+ amrinone (1.5 mg/kg bolus + 10 ug/kg/min infusion)(1). While minimally affecting systemic and pulmonary artery (PA) pressures, nesiritide produced a significant increase in CO in these patients. Table I illustrates hemodynamics pre and post nesiritide. B. In 2 patients with severe pulmonary HTN unresponsive to amrinone (1.5 mg/kg/bolus with 10 ug/kg/min infusion) undergoing CABG (1) and AVR/CABG(1), nesiritide resulted in reduced PA pressures and increased CO while minimally affecting systemic blood pressure (Table II). C. Nesiritide was initiated at the start of the case in 4 patients with renal insufficiency for renal protection, and continued for 24 hours postoperatively. During OPCAB (2), stable hemodynamics were observed in patients with concentric LVH (1) and low EF (1) respectively. Postoperatively hemodynamics remained stable and renal function was maintained in all patients (Table III). D. In one patient, undergoing BIVAD removal without CPB becoming oliguric during continuous iv fenoldopam

+ lasix, nesiritide restored urine output [10-400 cc/hr over 18 hrs, creatinine 1.5 mg/dl on POD#1 [1.2 preop]]. E. During LVAD placement nesiritide was given prophylactically in 1 case maintaining adequate LVAD flow, and in 1 case therapeutically for low flows despite iv fluids and RV support with isoproterenol improving LVAD flows from 3.3 to 4.0 l/m. **CONCLUSION:** Nesiritide improved hemodynamic performance in cardiac patients perioperatively, when standard therapy was ineffective for diastolic dysfunction and severe pulmonary hypertension. Nesiritide may be useful for renal protection perioperatively in patients with renal insufficiency needing CPB, and it may be indicated in selected patients with LVADS to improve flow. Formal randomized studies are needed to validate our observations.

Table I: **Diastolic dysfunction** and Nesiritide

Procedure	Ht.(in)/ Wt.(kg)	BP (mmHg)	HR (bpm)	PA (mmHg)	CVP (mmHg)	CO (l/m)
Pre	58"/52 kg	105/53	90	42/30	19	2.7
Post		108/48	90	48/29	18	3.5
Pre	70"/77 kg	135/52	90	46/24	14	3.3
Post		105/45	90	41/24	14	4.4
Pre	66"/98 kg	115/65	90	51/38	22	1.8
Post		105/55	90	44/30	18	2.8
Pre	56"/53 kg	103/60	91	23/15	11	2.3
Post		109/61	91	24/12	10	4.1

Table II: **Severe pulmonary hypertension** and Nesiritide

Procedure	Ht.(in)/ Wt.(kg)	BP (mmHg)	HR (bpm)	PA (mmHg)	CVP (mmHg)	CO (l/m)
* AVR, CABG, MAZE	Pre 72"/106 kg	95/55	120	80/45	21	3.0
	Post	95/55	120	55/36	20	4.4
** CABG CPB/No AoCX	Pre 72"/94 kg	110/58	115	93/46	15	5.3
	Post	95/52	108	75/41	13	6.3

\* = Nesiritide started post CPB, \*\* = Nesiritide started prior to CPB

Table III: **Renal protection** and Nesiritide

Procedure	CP B	Ht.(in)/ Wt.(kg)	Creatinine Preop	(mg/dl) POD 1	POD 2	POD 3	POD 4
OPCAB/ LVH	No	68"/95 kg	1.7	2.1	2.1	2.1	1.7
OPCAB/ ↓EF	No	64"/63 kg	1.7	1.7	2.0	1.9	1.8
CABG	Yes	67"/77 kg	1.5	1.1	1.3	N/A	N/A
CABD,AV- Debridement	Yes	65"/77 kg	1.4	1.1	1.0	1.1	1.0