

## A1017

**TITLE:** Semi-Emergent Intubation: Hemodynamic Changes  
**AUTHORS:** T.C. Mort, M.D., J. Brakoniecki, M.D.  
**AFFILIATIONS:** Anesthesia/Critical Care, Hartford Hospital,  
 Hartford, CT 06115

The hemodynamic response to intubation is well known in the operating room and various techniques have been successful in abating these responses (1). The OR offers a well controlled environment for handling alteration in hemodynamics following laryngoscopy and intubation, yet the major anesthesia texts only briefly mention the gravity of consequences outside the OR for the management of critically ill patients who require airway management. The medical evaluation of these patients can be both brief and stressful, and cardiopulmonary assessment can be incomplete. The purpose of this study was to determine if age, underlying disease, anesthetic technique or level of training (resident vs staff) were factors in predicting alterations in hemodynamics.

283 patients requiring airway control for acute deterioration due to cardiac, pulmonary, or neurologic disease were prospectively evaluated in a nonrandomized fashion. Management was based on the individual judgement of the intubator. A questionnaire was completed by the caregiver and a separate evaluation was carried out by the authors following stabilization in the ICU.

Hemodynamics were categorized as hypotension (MAP <60 if >20% change from baseline), tachycardia (>20% 1 from baseline) and 1 BP (>20% 1 MAP) and bradycardia (<60/min). Additionally, patients were separated in age groups: group 1, >70yr; group 2, 50-69yr; and group 3, <49yr. Neurologic/trauma comprised 80% of group 3, but only 3% of groups 1 & 2. Preparing the patient for intubation was based on the judgement of the physician. Patients were grouped by intervention: topical, midazolam 1-5mg IV, morphine 2-10mg IV, etomidate 6-12mg IV, thiopental 2.2-6 mg/kg IV, and midazolam-morphine IV. Overall, 96 patients (34%) had hypotension; 20% of these patients had a SBP <80mmHg, 33% had a SBP of <70mmHg, and 41% had SBP <60mmHg. Therapy for this response consisted of 93/96 (97%) receiving 500cc or greater of crystalloid to elevate MAP to greater than 60mmHg. Despite this, 51/96 (53%) required vasopressors and/or inotropes to meet this goal.

Overall, 139 patients (49%) had hemodynamic alterations with hypotension predominant in groups 1 & 2 (p=0.008) and both tachycardia and elevated blood pressure in group 3 (p=0.03). However, there was no difference in episodes of hypotension, degree of hypotension, or the need for vasopressor and/or inotropes when comparing topical vs sedation. The level of training had no correlation to the complication rate, as did the location of the intervention (ER vs ICU vs floor).

In conclusion, the critically ill patient who requires semi-emergent (non-arrest) airway management has a significant chance for hemodynamic change. Hypotension occurs at a greater frequency in those aged 50 years and older. Tachycardia and elevated blood pressure predominate in those less than 49 years old. There was no difference in hemodynamic parameters with topical vs sedative techniques, though one must conclude clinical judgement may have determined the choice of topical in selective patients due to extremes of acuteness. Level of experience was not found to be a factor. Though this is not an outcome study, appropriate forethought and preparedness for older patients and cautiously more aggressive approach to the younger population could limit the potential morbidity.

The marked difference in frequency of hypotension in this critically ill group compared to elective inductions in the OR should be a point of emphasis in our education (2,3).

## References

1. Anesthesia, Miller, 1990
2. AA 57:197,1978
3. AA 61:680, 1982

## A1018

**TITLE:** EFFECTS OF TRIIODOTHYRONINE (T3) ON  
 HEMODYNAMIC STATUS AND MYOCARDIAL  
 FUNCTION IN BRAIN DEAD DONORS  
**AUTHORS:** S. Cohen, M.D., J.P. Goarin, M.D., Y. Jacquens, M.D.,  
 A. Aurengo, M.D., F. Clergue, M.D., P. Viars, M.D.  
**AFFILIATION:** Département d'Anesthésie, Hôpital Pitié-Salpêtrière,  
 Paris, France

Brain dead donors (BDD) frequently have a low left ventricular ejection fraction (LVEF) and a fall in T3 levels. Efficacy of hormonal replacement (T3) regarding hemodynamic status and acid-base balance, has been suggested in a retrospective study (1). The aim of this randomized, double-blind study was to evaluate the effects of T3 administration on LVEF and hemodynamic status in BDD.

**Methods.** 21 BDD were randomly assigned to 2 groups: one received 0.2 µg/kg of i.v. T3 (group T3, n = 11) and the other received placebo (group P, n = 10). Hemodynamic status was assessed using invasive arterial pressure, Swan-Ganz catheter and transesophageal echocardiography (TEE). Measurements, including heart rate (HR), mean arterial pressure (MAP), mean pulmonary arterial pressure (PAP), pulmonary capillary wedge pressure (PCWP), cardiac index (CI) and systemic vascular resistance (SVR), and thyroid hormonal function (T3, T4, TSH), were performed before and 30 min after administration of T3 or placebo. Left ventricular end diastolic (EDa) and end systolic (ESa) areas were obtained from TEE data. LVEF was derived as EDa-ESa/EDa. Analysis of variance and Newman-Keuls test were used. Data are mean ± SD

**Results.** No significant differences were observed between the two groups before T3 or P administration. Hemodynamic and TEE variables remained unchanged in both groups after T3 or P administration (Table).

	GROUP T3 (n = 11)		GROUP P (n = 10)	
	BEFORE	AFTER	BEFORE	AFTER
HR (b/min)	103 ± 24	102 ± 9	108 ± 21	98 ± 14
PAM (mmHg)	90 ± 24	83 ± 17	75 ± 6	79 ± 17
PAP (mmHg)	20 ± 7	19 ± 6	19 ± 7	18 ± 7
PCWP (mmHg)	10 ± 6	9 ± 5	9 ± 4	9 ± 4
CI (l/min/m <sup>2</sup> )	3.9 ± 0.5	3.7 ± 0.6	3.6 ± 1.5	3.7 ± 1.2
SVR (IU)	22.0 ± 10.0	21.6 ± 6.2	20.9 ± 6.5	23.2 ± 9.8
EDa (cm <sup>2</sup> )	21.9 ± 7.3	21.6 ± 7.4	18.6 ± 4.3	18.4 ± 4.4
ESa (cm <sup>2</sup> )	12.2 ± 9.1	12.1 ± 8.6	9.3 ± 4.4	8.6 ± 4.3
FEVG (%)	51 ± 22	47 ± 21	50 ± 18	54 ± 18

In all patients, plasma T3 levels were below the normal range (2.9 - 8.9 pmol/l): 2.12 ± 0.88 (group T3) and 1.65 ± 1.36 pmol/l (group P), and were normalized after administration T3 (8.68 ± 2.37 pmol/l).

**Discussion.** These results do not agree with those previously reported in experimental (2) and retrospective clinical studies (1). Despite a normalization of plasma T3 levels, no significant effects on myocardial function and hemodynamic status were observed. This study suggest that hormonal replacement is not justified in BDD.

- References.** 1. Transplantation 43 : 852-854, 1987  
 2. Transplantation 45 : 32-36, 1988