

TITLE: EFFECTS OF ANESTHETIC OVERDOSE WITH ISOFLURANE AND SEVOFLURANE ON HEMODYNAMICS AND OXYGENATION

AUTHORS: R.C. Cork, MD, PhD, J.A. DiNardo, MD, R.W. Hilwig, PhD., K.B. Kern, MD

AFFILIATION: Depts. Anesth., U. of AZ, Tucson, AZ 85724

Inadvertent anesthetic overdose is the major non-ventilatory anesthetic mishap.¹ The purpose of this study was to compare the effects of high-dose sevoflurane and high-dose isoflurane on hemodynamics and oxygenation in the pig.

After approval by our animal committee, twelve pigs weighing 23 to 33 kg were randomly assigned to receive either sevoflurane or isoflurane for anesthesia. After mask induction with the anesthetic and endotracheal intubation, each pig underwent cut-downs for catheter placement: (1) the left ventricle (via the r. carotid), (2) the ascending aorta (via the r. femoral a.), and (3) the right atrium (via the r. internal jugular vein). A Swan-Ganz catheter was also positioned. Mean Blood Pressure (MBP) was used as the basis for overdosage with MBP > 70 mmHg defined as normal and MBP < 40 mmHg defined as overdosage. Pressures and blood gases were measured after 10 min at low and high MBP, and the order of these measurements was randomly determined.

Six pigs received sevoflurane and six received isoflurane. The table shows some of the hemodynamic and oxygenation variables measured at normal and overdose conditions. Sevoflurane maintained SVR with overdose, while isoflurane overdose significantly decreased SVR ($p < 0.05$). No significant differences in ABC's or VBC's were found at normal or overdose conditions between the agents, but sevoflurane exhibited significantly lower O_2ER , $AVDO_2$, and VO_2 at overdose conditions ($p < 0.05$). Ischemic ECG changes with overdose were noted in 3 pigs receiving sevoflurane and 1 pig receiving isoflurane.

Anesthetic concentrations to maintain a normal MBP were not significantly different between groups; however, in order to decrease MBP below 40 mmHg, a significantly higher concentration of sevoflurane was necessary. This may provide an additional margin of safety for sevoflurane in the risk of overdose. Sevoflurane maintained SVR, and isoflurane did not. In addition, oxygen consumption was significantly lower with sevoflurane at overdose conditions compared to isoflurane. These differences imply that overdose with sevoflurane is more difficult to achieve than it is with isoflurane, and that when it is achieved, sevoflurane could provide a more favorable oxygen supply-demand ratio under comparable overdose conditions.

TABLE:

	Normal (Isoflurane)	Overdose (Isoflurane)	Normal (Sevoflurane)	Overdose (Sevoflurane)
etAnes (%)	2.65±0.43	4.02±0.90*	2.60±0.34	6.25±0.57**
HR (beats/min)	114±6	107±4	121±5	99±2*
MBP (mmHg)	82±7	34±1*	80±7	38±3*
CO (L/min)	4.1±0.7	2.0±0.1*	4.2±0.4	1.8±0.3*
SVR (dynes-sec-cm ⁻⁵)	1680±130	1250±80*	1580±130	1730±200*
PVR (dynes-sec-cm ⁻⁵)	220±70	220±60	155±30	220±50
AVDO ₂ (ml/dl)	4.3±1.4	6.9±0.9	3.4±0.5	4.1±0.6*
O ₂ ER	0.32±0.07	0.48±0.05*	0.26±0.04	0.33±0.03*
VO ₂ (ml/min)	224±122	130±14	151±38	74±13*

*Significantly different from normal at $p < 0.05$

**Significantly different from isoflurane overdose at $p < 0.05$

¹Keenan R. L., Boyan C. P., JAMA 253:2373-2377, 1985.

²JAMA 253:2373-2377, 1985.

A1078

TITLE: RESIDENT SELECTION IS NOT INFLUENCED BY TIMING OF INTERVIEW

AUTHORS: K.S. Pearson, M.D., R.P. From, D.O., J.R. Moyers, M.D., C.D. Kreiter, M.A., M.A. Albanese, Ph.D., M.N. Gomez, M.D., B.J. Hindman, M.D., D.J. Murray, M.D., J. H. Tinker, M.D.

AFFILIATION: Department of Anesthesia, University of Iowa, Iowa City, IA 52242

Introduction: The interview process is believed by many to be vital in evaluating and selecting prospective residents.¹ Multiple characteristics have been found to influence the resident selection process.² Potential problems could exist with both early and late interviews. For example, the early applicant may benefit from comparison with fewer candidates, leaving a better than expected impression. On the other hand, the later candidate could benefit from having the interview closer to the final rank meeting, resulting in a fresher impression in the interviewer's memory. This study was designed to determine the influence of time elapsed from the interview for a PGY 1 position to construction of final National Resident Matching Program (NRMP) match list.

Method: Seven faculty members served as the Resident Selection Committee. Four members, on a

rotating schedule, interviewed 88 candidates on ten interview days during a five month period from November 1989 to March 1990. Following all interviews, a rank order was created by group consensus. Spearman correlations were used to compare rank order with time elapsed from the interview. $P < 0.05$ accepted as significant.

Results: A correlation of near zero was obtained between rank and time of interview. Visual inspection of a scatter plot showed no evidence of a non-linear trend of any kind.

Discussion: We could demonstrate no influence of date of applicant interview on final resident selection. In our system of residency interviewing, neither early nor late interview dates influenced the final rank list. We speculate that this is due to the fact that each candidate was interviewed by multiple faculty members who then shared their impressions with the other experienced interviewers.

Ref:

1. Spielman FJ, et al: A survey of anesthesiology chairman regarding resident selection criteria. *Anesthesiology* 57:A435, 1982
2. Wagoner NE, et al: Report on a survey of program directors regarding selection factors in graduate medical education. *J. Med. Educ.*, 54:445-452, 1979