Anesthesiology
V 75, No 3A, Sep 1991

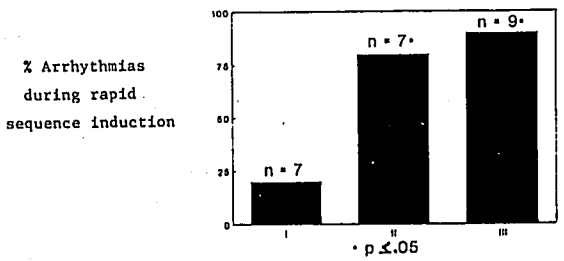
A91

TITLE: SMOKERS ARE MORE PRONE TO ARRHYTHMIAS THAN NONSMOKERS DURING RAPID SEQUENCE INDUCTION

AUTHORS: R.L. Martin, M.D., W.C. Stevens, M.D.
AFFILIATION: Anes. Dept., Oregon Health Sciences University, Portland, OR 97201

Introduction: Sixty percent of patients undergoing general anesthetics experience arrhythmias.[1] We prospectively studied whether there was a relationship between smoking history and the incidence of arrhythmias during intravenous rapid sequence inductions.

Methods: Study methods were approved by our IRB. Informed consent was obtained and 23 unpremedicated ASA I and II patients with an average age of 33 years in the nonsmokers (n=9), 44 years in reformed smokers (n=7, smokers who quit smoking >1-15 years before surgery) and 32 years in the smokers (n=7). After 4 minutes of preoxygenation we gave thiopental, 4 mg kg^{-1} IV and succinylcholine 1 mg kg^{-1} IV and applied cricoid pressure (Sellick Manuver). Ninety seconds after succinylcholine administration all patients were intubated with a styletted 7.0 mm endotracheal tubes to 20 cms with a MacIntosh #3 blade laryngoscope. After confirmation of intubation by visualization, ET-CO_2 waveform, and auscultation of breath sounds, inspired Forane (FI-ISO) was turned to 3.0 and 50% N_2O, 50% O_2 was administered by controlled ventilation with ET-CO_2 30-38 mm Hg and O_2 Sat > 95%. Continuous lead II and V_5 electrocardiogram heart rate and systolic, diastolic and mean blood pressure was recorded on continuous strips. Vital signs were recorded and analyzed from hospital admission, pre-induction, induction, intubation, 5 minutes post-intubation, and 10 minutes post-intubation.



Results: 14.3% of nonsmokers (Group I), 85.7% of smokers who had quit (Group II) and 88.8% of active smokers (Group III) developed arrhythmias. All group III patients were smoking from 0.5-1.0 packs of cigarettes per day. Reformed smokers had quit smoking an average of 6.5 years. No other differences in inductions between groups including a history of hypertension, cardiac disease, medications or pulmonary disease were detected. All arrhythmias were bigeminal and/or multifocal ventricular extrasystoles persisting for up to five minutes, and were successfully treated with lidocaine 0.5-2 mg kg^{-1} IV. All intubations were successful on the first attempt. Differences in group age, weight, systolic, diastolic and mean blood pressures, heart rates, oxygen saturation, and ET-CO_2 at the times measured were nonsignificant using ANOVA and CHI square analysis.

Discussion: Smokers are more prone to arrhythmias than nonsmokers during rapid sequence inductions ($p \leq .05$). Surprisingly reformed smokers who have not smoked for 1-10 years preoperatively are also more prone to arrhythmias than nonsmokers during rapid sequence induction ($p \leq .05$). Differences between smokers and reformed smokers were nonsignificant.

1. Anesthesiology 72:347-374, 1990.

A92

TITLE: TRANSESOPHAGEAL PACING AND PHARMACOLOGIC INTERVENTIONS IN CARDIAC ARRHYTHMIAS

AUTHORS: A. R. Abadir, M.D.[1], A. Kirkutis, M.D.[2], A. Puodžiukynas, M.D.[2], J. Gintautas, M.D., Ph.D.[1]
AFFILIATION: [1]The Brookdale Hospital Medical Center, Brooklyn, New York 11212 USA
[2]The Kaunas Academy of Medicine, Kaunas, Lithuania, 233043

Transeophageal cardiac pacing was introduced into clinical practice in 1969 by Burack and Furman[1]. Since then it has become a useful method for the induction and termination of re-entrant tachycardia, for the assessment of its mechanism and character and permit the performance of serial drug testing and assessment of the effectiveness of a long-term antiarrhythmic drug therapy[2,3].

We present the method of temporary transeophageal overdrive left atrial pacing for the assessment of antiarrhythmic drug efficacy and the establishment of indications for permanent overdrive suppression in patients with ventricular premature beats (VPB).

After Institutional approval, we evaluated 121 patients with symptomatic VPB (≥ 2 grade by Lown). The main causes of VPB were myocardial fibrosis after myocarditis (40%), coronary artery disease (30%) and idiopathic arrhythmia (30%). In addition to routine cardiologic investigations (ECG, Holter monitoring, echocardiography, etc.), a noninvasive transeophageal electrophysiologic study was performed. For this purpose, a specially designed bipolar electrode was introduced into the esophagus and connected to a pacemaker (both produced by the "Cordelectro Co." Kaunas, Lithuania). Pacing was begun from a rate of 10% over the sinus rhythm rate and then increased until VPB's disappeared. Various class I-II antiarrhythmic drugs were used IV to validate it's influence on "overdrive" suppression rate.

In 16 (13.2%) of 121 patients, an "overdrive" pacing rate ≥ 85 per minute was sufficient to suppress VPB's without antiarrhythmic drug use. In the remaining 105 patients different antiarrhythmic drugs were applied.

Procainamide (N=20) (Class IA, dose 10 mg/kg). After a full dose intravenously, the effective "overdrive" pacing rate needed to suppress VPB's in this group decreased from 106.6 ± 4.0 to 92.7 ± 4.5 impulses per minute ($p<0.01$). For 4 (20%) of the patients this rate became less then 85 impulses per minute, i.e., acceptable for permanent pacing.

Diisopyramide (N=16) (Class IA, dose 2 mg/kg). VPB's in this group decreased from 113.5 ± 10.5 to 97.8 ± 8.0 impulses per minute ($p<0.01$). Only for one (6.25%) patient did this rate become less than 85 impulses per minute.

Lidocaine (N=14) (Class IB, dose 1 mg/kg). VPB's in these groups decreases from 107.6 ± .4 to 87.0 ± 4.3 impulses per minute ($p<0.01$). For 3 (21.4%) patients this rate became less than 85 impulses per minute.

Propranolol (N=15) (Class II, dose 0.1 mg/kg). VPB's in this group decreased from 110.6 ± 4.2 to 94.1 ± 4.1 impulses per minute ($p<0.01$). For 3 (15%) patients this rate became less than 85 impulses per minute.

Talinolol (N=20) (Class II, dose 0.1 mg/kg). VPB's in this group decreased from 116.8 ± 6.0 to 97.7 ± 6.3 impulses per minute ($p<0.01$). For 3 (15%) patients this rate became less than 85 impulses per minute.

Therefore, temporary "overdrive" atrial pacing allows the suppression of VPB's without antiarrhythmic drugs, with a rate acceptable for permanent use in 13.2% of cases. The use of Class I-II antiarrhythmic drugs allows a decrease in the effective "overdrive" atrial pacing rate and in 14.4% of the cases it becomes lower than 85 per minute (acceptable for permanent use).

We conclude, that transesophageal pacing provides an attractive alternative to endocardial pacing, especially useful in patients requiring studies for serial drug testing in the treatment of supraventricular tachycardias.

References
1. Am. J. Cardiol. 23:468, 1969
2. Circulation 75 (suppl):86, 1987
3. Transesophageal Cardiac Pacing, Cordelectro Publ., Co. Kaunas, 1991.