

Arrhythmias and Negative Airway Pressure

To the Editor: I read with interest the case report, "Cardiac arrhythmia induced by negative phase in artificial ventilation," *ANESTHESIOLOGY* 29: 382, 1968, and I would like to compliment Dr. A. Pace-Florida and colleagues on this important observation.

We have observed arrhythmias, mainly bigeminy, in dogs during our studies of the "Effect of continuous positive and continuous negative pressure breathing on the urine formation,"¹ in which we found that during negative-pressure breathing there was a significant diuresis associated with a reduction in anti-diuretic hormone levels. The influence of negative pressure on urine flow was abolished by bilateral cervical vagotomy.

Arrhythmias, mainly ventricular bigeminy, appeared in one third of the dogs when sub-atmospheric airway pressure exceeded 10 cm. water, and rapidly disappeared when it was replaced by ambient pressure. Arrhythmias

did not appear following application of positive pressure to the airway. When high bilateral vagotomy was performed prior to the application of negative pressure, no arrhythmias were seen.

The occurrence of diuresis and arrhythmias following negative-pressure breathing, and the disappearance of both after vagotomy, suggest that the mechanism may be the same in both circumstances.

M. R. SALEM, M.D.

Assistant Professor of Anesthesiology
University of Chicago Hospitals
Chicago, Illinois

REFERENCE

1. Salem, M. R., Ginsburg, D., Rattenborg, C. C., and Holaday, D. A.: The effect of continuous positive and negative pressure breathing on the urine formation, *Fed. Proc.* 23: 362, No. 2 (Abstract 1570), 1964.

Surgery

PSYCHOPHYSIOLOGIC RESPONSES This study seeks to provide tentative answers to the following questions: (1) Are there similar overall patterns of reactivity in certain variables before, during, and after anesthesia and operation? (2) If so, can these patterns of reactivity be modified by sedative premedication (and therefore, possibly by psychological means, such as the anesthesiologist's preoperative visit)? (3) To what degree does the anesthetized patient respond to stimuli experienced during the operation? Continuous measurements of pulse rate, digital volume pulse, arterial pulse wave velocity, and galvanic skin response (GSR) were made. The following findings were noted: (1) all patients had similar overall patterns of reactivity for the same autonomic measure; (2) the patterns of response for different measures were not necessarily similar; (3) the degree of autonomic arousal was modified by preanesthetic medication, and this persisted throughout the period of observation; (4) Crile's hypothesis that noxious stimuli do reach the central nervous system of a patient under general anesthesia was substantiated. In general, preoperative anxiety does affect the patient's physiologic status significantly, and the authors suspect that a high level of anxiety may be more disruptive physiologically than is often recognized. (Williams, J. G. L., and Jones, J. R.: *Psychophysiological Responses to Anesthesia and Operation*, *J.A.M.A.* 203: 415 (Feb.) 1968.)