Title: LIFE-THREATENING APNEIC EPISODES IN INFANTS DURING RECOVERY FROM ANESTHESIA

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Life-threatening apneic episodes sometimes occur in infants following anesthesia for minor surgical procedures such as inguinal herniorrhaphies[1]. Many of these babies appear "normal" at the time of admission to the hospital, and they are often scheduled as outpatients. To determine the risk of life-threatening apnea in infants during recovery from anesthesia, we undertook a prospective study of children under 12 months of age.

Methods. Infants who were anesthetized by members of the pediatric anesthesia group at our hospital during a one year period were included in this study. Immediately after each anesthetic, data sheets were completed by the anesthetist involved in the case.

Premature infants were defined as those who were born before 37 weeks of gestation. Term infants were those who had a longer gestational period. A preanesthetic history of apnea was defined as idiopathic apneic episodes associated with bradycardia, cynaosis, or pallor. Life-threatening apnea during recovery from anesthesia was defined as apneic episodes associated with bradycardia, cyanosis, or pallor which occurred 20 minutes after the onset of spontaneous ventilation.

Results. 50% of the prematurely born infants who had a preanesthetic history of apnea required ventilatory assistance after anesthesia because of life-threatening apneic spells. There was a significant difference in both the postnatal and conceptual (gestational and postnatal age) ages between the infants that required ventilatory assistance and those that did not. Except for one patient who was brain damaged, all prematurely born infants that required ventilation were under 4 months of postnatal age and 41 weeks conceptual age. The prematurely born infants with a history of apnea who did not require ventilation were at least 3 months postnatal age and over 46 weeks conceptual age.

There was no significant difference in gestational age, birth weight, ASA physical status, medication history, surgical procedure, temperature, duration of anesthesia, anesthetic agents and drugs used during anesthesia between the prematurely born infants that required ventilatory assistance during recovery from anesthesia and the group that did not.

Conclusions.

1. Prematurely born infants who have a history of apnea with cyanosis, bradycardia, or pallor have a very high risk of developing life-threatening apnea during recovery from anesthesia. These infants should be carefully monitored after receiving anesthesia, and appropriate equipment and experienced personnel should be available to prevent these children from dying.
2. Conceptual age is an important factor in determining the incidence of life-threatening apnea during recovery from anesthesia.

TABLE 1. Distribution of Infants

	Premature	Term
Anesthetics administered	41	17
History of apnea (# of pts)	15	0
Postanesthetic ventilation		
Number of patients	18	0
Indications:		
Apnea	7	0
Apnea history	1	0
Others	10	0

TABLE II. Premature infants with history of apnea requiring ventilatory assistance vs no assistance.

	Ventilated	Not Ventilated
Gestational age (wk)		
Mean ±S.E.	30.7±1.4	31.1±0.9
Range	25-36	28-36
Postnatal age (mo)		
Mean ±S.E.	2.4±0.9*	5.6±1.0*
Range	0-7	3-11
Conceptual age (wk)		
Mean ±S.E.	41.5±3.0*	55.1±4.2*
Range	33-58.9	46.7-79.9

*$p<0.02$ (t-test between the two groups)

Reference

1. Steward, DJ: Preterm infants are more prone to complications following minor surgery than term infants. Anesthesiology 56:304-306, 1982.