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TITLE: THE INCIDENCE OF CONSCIOUS AWARENESS IN A GENERAL POPULATION OF ANESTHETIZED PATIENTS
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Introduction: The incidence of conscious awareness with explicit recall in anesthetized patients is unknown (1). In a prospective clinical study approved by the Local Ethical Committee, this anesthetic complication was investigated during one year at Herlev University Hospital in Copenhagen.

Methods: Of 7306 consecutive general and regional anesthetics 3415 generally anesthetized patients stayed longer than 24 hours in hospital. These patients constitute the study population. All patients received intraoperative care, including preoperative evaluation; choice of premedication, monitoring modalities, intraoperative anesthetics, and non-anesthetic agents; and immediate postoperative care under the direction of an anesthetist not participating in the study. Routine intraoperative monitors, e.g., continuous electrocardiogram and indirect blood pressure determination were utilized for all patients. The response to train-of-four nerve stimulation was evaluated manually during anesthesia involving non-depolarizing muscle relaxants. Most patients were premedicated with oral diazepam, 0.2 mg/kg b.w; and were induced with thiopentone, 5 mg/kg b.w; and paralysed with succinylcholine chloride, 100 mg. During induction the patients were ventilated with 100% oxygen, after induction, 33% or 50% oxygen in nitrous oxide. All data were collected by observers who did not participate in the care of the patients. 24 hours postoperatively the "in hospital" patients were asked if they had any experience of being aware during the anesthetic.

Results: 8 reports (7 F, 1 M) of conscious awareness with explicit recall were obtained (0,2%)(table 1). All patients except 1 were anesthetized with a neurolept technique, and had been anesthetized earlier without complications. All experienced fear during the anesthetic, 2 had pain sensations and all were unable to move when aware. In a follow-up investigation 42 months later 1 patient was dead, 1 could not be found, the remaining patients still remembered the period of awareness. Of these, 1 has nightmares and fear of death, 2 need analgesics and sedatives daily. 3 patients were consulted by a doctor 1-2 days after the experience, with some relief. All patients, from time to time, have the experience of fear when falling asleep, and all express anxiety concerning future anesthetics.

Conclusion: We find that the incidence of conscious awareness with explicit recall in this population is 0,2%, and we find that these patients still have serious problems 42 months later due to this experience.

Table 1

Duration hours	age years	sex	droperidol mg	fentanyl mg	muscle-relax.	A	B	C	D	E
1 1½	24	F	7,5	0,5	+	+				+
2 2	55	F	10	0,45	+	+				+
3 1½	57	F	enflurane 1%		+		+	+		+
4 ¾	26	F	12,5	0,6	+		+		+	+
5 2¼	56	F	15	0,75	+		+		+	+
6 2	36	M	12,5	0,4	-		+			+
7 8	51	F	17	1,3	+		+	+	+	+
8 ¾	42	F	5	0,2	+		+		+	+

A Awareness at induction
 B Awareness during operation
 C Awareness at the end of the operation
 D Sensations of pain
 E Experience of fear

Reference 1: Griffiths D, Jones JG. Editorial. Awareness and memory in anaesthetized patients. Br J Anaesth 1990; 65: 603-6.

A1056

Title: ANESTHETIC MORBIDITY IN CONGENITAL HEART DISEASE PATIENTS UNDERGOING NON-CARDIAC SURGERY
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Introduction: Major advances in the anesthetic management of pts with congenital heart disease (CHD) undergoing cardiac surgery have resulted in significant decreases in anesthetic morbidity and mortality. The most recent review of anesthetic complications in surgery for CHD noted an anesthetic mortality rate of zero% and a morbidity rate of 2%.¹ Nevertheless, there have been no studies addressing anesthetic mortality and morbidity in CHD pts who undergo non-cardiac surgery. We present a review of 110 consecutive pts with CHD who underwent a total of 135 anesthetics for non-cardiac surgery during a one-year period (Jan 1990-Jan 1991).

Materials and Methods: 110 consecutive pts with CHD were identified prior to planned surgical intervention. A detailed questionnaire was completed by the resident immediately after the procedure. Intraoperative course, the immediate post-operative period (up to 6 hours) and adverse events were recorded.

Results: 110 consecutive pts (49F, 61M) with CHD underwent 135 anesthetics during the study period. Ages ranged from 1 day-33 yrs (median 2.9yrs). 28 pts were <1yr. 97 pts were ASA II or III. 60 pts had undergone previous palliative (19) or definitive (41) cardiac surgery. Many pts had multiple cardiac diagnoses (Table I). 16 pts had Down's syndrome. 14 pts (13%) had room air O2 saturation <90%. 86 pts (78%) had no evidence of congestive heart failure (CHF), while 17/24 pts had compensated CHF. Anesthetic technique varied (Table II). In the 135 anesthetics reviewed, 52 pts had a total of 71 adverse events noted (Table III). 15/52 pts had more than one adverse event. 2 pts required unexpected ICU admissions. 9 pts required intraoperative inotropic support. Except for Tetralogy of Fallot (9/13 pts had an adverse event), no CHD diagnosis predominated in morbidity. Overall, 52/110 pts (47%) experienced an adverse perioperative event.

Table I.

CHD Diagnosis	# Pts
ASD/VSD	89
PDA	11
Coarctation	9
TOF	13
Te/Pulm Atresia	8
TGA	6
TAPVR	2
HLHS	1
DORV	5
AS/MS/MR	17
Other	32

Table II.

Technique	# Pts
Regional	2
GA/Regional	7
GA/inhalation	21
GA/narc/relaxant	105

Table III.

Adverse Event	# Pts
Airway emergency	22
Bronchospasm	4
Dysrhythmias	17
Circ instability	16
Acidosis	2
Hypoglycemia	1
Delayed emergence	4
Nausea/emesis	5

Discussion: While advances in anesthetic care have greatly reduced morbidity and mortality during cardiac surgery for CHD, this review documents a less impressive experience when these pts undergo non-cardiac surgery. 47% of pts experienced an adverse event attributable to anesthesia. Surgery or anesthesia may stress or unmask compensated cardiac abnormalities in the CHD pt, but unlike cardiac surgery, non-cardiac procedures do not improve the pt's underlying cardiac disease. These findings warrant further evaluation of factors contributing to perioperative morbidity in the CHD pt undergoing non-cardiac surgery.

References: 1. Anesth Analg 63:657-64, 1984.