ANESTHESIA - RELATED CARDIAC ARREST IN PEDIATRICS

Essay

Submitted for partial fulfillment of the
Master Degree of **ANAESTHEIA**

Presented by
Maisaa Ahmed Ebrahim
M.B.,B.Ch.

Under supervision of

Prof. Dr. Saif El Eslam Abd El Aziz Shahin
Professor of Anaesthesia and Intensive Care
Faculty of Medicine-Ain Shams University

Prof. Dr. Mushera Ahmed Hussin Aomar
Assistant Professor of Anaesthesia and Intensive Care
Faculty of Medicine-Ain Shams University

DR. Khaled Mustafa El Kouisni
Lecturer in Anaesthesia and Intensive Care
Faculty of Medicine-Ain Shams University

Faculty of Medicine
Ain Shams University
2004

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Faculty of medicine
Depart.of anesthesia&icu

جامعه عين شمس
كليه الطب
قسم التخدير و الرعايه المركزة

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Maisaa Ahmed Ebrahim

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تحت عنوان:

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توقف عضلة القلب فى الأطفال و علاقته بالتخدير

تحت أشراف:

أ . د . / سيف الأسلام عبدالعزيز شاهين
أستاذ التخدير و الرعاية المركزة
جامعة عين شمس

أ . د . / مشيرة أحمد حسين عمر
أستاذ مساعد التخدير و الرعاية المركزة
جامعة عين شمس

د . / خالد مصطفى القويسنى
مدرس التخدير و الرعاية المركزة
جامعة عين شمس

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المحتويات

Acknowledgment

First; thanks are all due to ***God*** for blessing this work until it has reached its end as a part of his generous help throughout my life.

I would like to direct special thanks to ***Prof. Dr***. ***Saif El Eslam Abd El Aziz Shahin***, Professor of Anaesthesia and Intensive Care Faculty of Medicine, Ain Shams University, for the great support and encouragement he gave me throughout the whole work . It has a great honor to work under his guidance and supervision.

I am also very grateful to ***Prof. Dr. Mushera Ahmed Hussin Aomar,*** Assistant Professor of Anaesthesia and Intensive Care**,** Faculty of Medicine, Ain Shams University**,** for her close supervision , continuous help and the great effort she has done during the preparation and revision of the whole work .

I am deeply indebted to ***DR. Khaled Mustafa El Kouisni,*** Lecturer in Anaesthesia and Intensive Care, Faculty of Medicine,Ain Shams University , for his generous help and support ; he gave me in each step of this work.

Maisaa Ahmed Ebrahim

LIST OF ABBREVIATIONS

ABC Airway-breathing-circulation
POCA Pediatric Perioperative cardiac arrest registry
PEA Pulseless Electrical activity
VT Ventricular Tachycardia
VF Ventricular Fibrillation
EMD Electromechanical dissociation
AHA American Heart Association
LMA Laryngeal mask airway
ARDS Adult respiratory distress syndrome
RSI Rapid sequence intubation
bpm beat per minute
CPR cardiopulmonary resuscitation
IAC-CPR Interposed-abdominal compression
MAST Medical antishock trousers
ECMO Extracorporeal membrane oxygenaion
PALS Pediatric Advanced Life Support
AV block Atrio-ventricular block
SVT Supra ventricular tachycardia
ST Sinus tachycardia
ACLS Advanced cardiac life support
AEDs Automated external defibrillator
BLS Basic Life Support
ALS Advanced Life Support
NRCPR National registry for cardiopulmonary Resuscitation
DHHS Department Of Health and Human Services

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Introduction

The improvement in mortality rates for anesthetized children over the past 50 years reflects the many improvements that have been made in pediatric perioperative care. The modern pediatric anesthesiologist is better trained than the predecessors of half a century ago, and has a vastly improved arsenal of monitoring devices and anesthetic agents from which to choose. The modern pediatric perioperative environment is better equipped to meet the unique needs of children. Techniques practiced by surgeons, nurses, radiologists and pharmacologists help create a far more sophisticated infrastructure than existed 50 years ago. Given these changes, it is not surprising that outcomes for patients have Improved ***(Morray JP, 2002)***

A higher incidence of mortality in anesthetized children compared with adults has been found many times since first reported in 1954 in the classic study of ***Beecher and Todd in 1954***

In 1961, ***Rackow*** and his colleagues reported that the frequency of cardiac arrest associated with anesthesia in infants less than 1 year of age was 16.2 per 10,000 anesthetic procedures. The difference between adults and children was significant only if children less than 1 year were included in the analysis.

In the past 20 years, anesthesia-related mortality in children has decreased considerably ***Smith R*** in ***1975*** reported a decline in the mortality rate at The Children's Hospital in Boston from two anesthesia-related deaths per 10,000 anesthetics for the

decade ending in 1966 to 0.6 per 10,000 anesthetic procedures for the subsequent decade**.**

Despite advances in pediatric anesthesia, the anesthesia-related mortality rate in children is still higher than that in adults, and is higher in younger children than in older children. A number of studies have identified children less than 1 year of age as being at the highest risk. ***(Morray JP, 2002)***

Anesthesia-related cardiopulmonary arrest is thankfully an uncommon event during anesthesia administered to pediatric patients .in order to expend upon and fully understand data on the uncommon event of anesthesia-related cardiopulmonary arrest in the pediatric population ,Morray and his colleagues established the pediatric perioperative cardiac arrest(POCA)registry***.(Schwartz AJ,2003)***

In the Pediatric Perioperative Cardiac Arrest (POCA) Registry, patients under 1 year of age accounted for 55% of all anesthesia-related cardiac arrests. ***(Morray JP et al., 2000)***

These studies suggest that risk of anesthesia-related cardiac arrest and death is inversely proportional to age, with the youngest patients at highest risk.

In the POCA study, death following anesthesia-related cardiac arrest was predicted most strongly by ASA Physical Status, though emergency surgery was also predictive ***(Morray JP, et al 2000)***

The health care provider may also play a role in determining risk of anesthesia-related complications, including cardiac arrest***. (Keenan et al 1991)***

Introduction

The principles of cardiopulmonary resuscitation during the perioperative period follow the general guidelines established for the pediatric patient***. (American heart association, 2000)***

There are some distinguishing characteristics of perioperative cardiac arrest that should result in better outcomes than are reported in outpatient or (out-of-operating-room) inpatient cardiac arrest, however. Perioperative cardiac arrests occur under the watchful supervision of anesthesia personnel; as a result, intervention and resuscitation can begin immediately. ***(Morray JP, 2002)***

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