Cardiac Arrest During Anesthesia

ESSAY
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INTRODUCTION

Cardiac arrest of patients during anesthesia has been the driving force behind the development of this specialty. Safer procedures, new anesthetics, and technical improvements such as monitoring devices and ventilators have successfully reduced intraoperative mortality. Nevertheless, modern technology itself creates specific risks; and causes, diagnosis, and management of anesthesia-related cardiac arrest differ considerably from situations encountered elsewhere. (Mathias Z & Wolfgang U, 2008)

Initially, cardiac arrest seemed to be only related to the use of general anesthesia. But with the increased use of regional anesthesia, fatal outcome was also connected with physiological causes as a result of loss of sympathetic reflexes, drug toxicity, convulsions, and early or delayed hypoxia. (Bhanaker SM, et al., 2007)

First, there is no uniformly accepted definition of the anesthesia-related cardiac arrest. Second, the time frames range from 'drug intake for premedication to 30 days after surgery' to 'during induction of anesthesia' or 'during the stay in the operating theatre.' Third, there is a considerable heterogeneity in the patient groups regarding not only the investigated age groups or patient co morbidities, but also the surgical procedures. (Davis PJ. 2007)
The incidence of anesthesia-related cardiac arrest in noncardiac surgery patients is reported to range from 0.2 to 1.1 per 10000 adults and from 1.4 to 2.9 per 10000 children in developed countries today. (*Fick RP, et al.*, 2007)

The incidence of peri-operative cardiac arrest is higher in children, especially newborn and infants. In recent studies; infants accounts for almost 50 % of all pediatric cardiac arrest cases. The frequency of anesthesia-related cardiac arrests in patients undergoing cardiac surgery is higher. (*Odegaard Kc, et al.*, 2007)

There is a positive correlation between higher ASA classification and the increased risk for cardiac arrest in adult and pediatric age populations. (*Jimeneze N, et al.*, 2007)

Causes of cardiac arrest during anesthesia are mainly divided into four categories; those resulting from preoperative complications (65%); surgical procedures (24%) intraoperative pathological events (9%); and those attributed to anesthetic management (2%). (*Irita k, et al.*, 2002)
Half of the anesthetic management-related events were caused by airway or ventilatory problems followed by medication accidents and infusion/transfusion mishaps. *(Sprung J, et al., 2003)*

Human error has long been identified as a major factor leading to anesthesia-related cardiac arrest, but the complex structure of a combination of repeatedly occurring human error, previously called the “chain of accident evolution” challenges successful strategies. *(Murray DJ, et al. 2004)*

Monitoring improvement such as pulse oximetry, capnography and also institutional improvement including adequate postoperative surveillance have contributed to better anesthetic safety. *(Gaba DM. 2000)*

Cardiac arrest during anesthesia occurs in an ideal setting for optimal quality resuscitation, where cardiac arrests are always observed, patients are monitored, intravenous accesses are established, and oxygen, emergency drugs and a defibrillator are immediately available. Altogether, perioperative cardiac arrest is fortunately a rare event, and regarding anesthesia-related cardiac arrest, it is associated with a favorable outcome (80%). *(Runciman WB. et al., 2005)*
**CONTENTS**

1-Introduction.

2-Risk factors for cardiac arrest during anesthesia.

3-Causes of cardiac arrest during anesthesia.

4-Prevention of cardiac arrest during anesthesia.

5-Management of cardiac arrest during anesthesia.
**Aim of the work**

The aim of the essay is to discuss the causes, features, risk factors and means of prevention and management of Cardiac arrest during anesthesia. It emphasizes that anesthesiologists have to maintain the required awareness and competence to deal with such situation and reduce the incidence of catastrophic outcome.
REFERENCES


2- Davis PJ. When assessing what we know we don't know is not enough: another perspective on pediatric outcomes. Anesth Analg 2007; 105:301 -303.


