Anesthesia for Eye Surgery
Recent Update

Essay

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in anesthesia

by

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﴿ . . . يَرْفَعِ ٱللَّهُ ٱلَّذِينَ ءَامَنُوا۟ مِنكُمْ وَٱلَّذِينَ

أُوتُوا۟ ٱلْعِلْمَ دَرَجَٰتٍ ۚ وَٱللَّهُ بِمَا تَعْمَلُونَ خَبِيرٌ ﴿١١﴾ ﴾

(سورة المجادلة: من الآية ١١)

صدق الله العظيم

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AAG	alpha (1) – acid glycoprotein
ACC	American college of cardiology
AHA	American heart association
CNS	central nervous system
CPR	cardiopulmonary resuscitation
DCR	dacrocystorhinostomy
DTFNBA	Deep topical fornix never block anesthesia
EUA	examinations under anesthesia
G	gauge
GA	General anesthesia
IOP	intraocular pressure
LA	local anesthesia
LMA	laryngeal mask airway
MAC	monitored anaesthesia care
mEq	milliequivalent
MH	Malignant hyperthermia
NMB	neuromuscular blocker
NSAIDs	non – steroidal ant- inflammatory drugs
OCR	Oculocardiac Reflex
Paco2	Partial Pressure of Carbon Dioxide in Arterial Blood
Pao2	Partial Pressure of oxygen in Arterial Blood
PONV	postoperative nausea and vomiting

Introduction

Introduction

Anesthesia for ophthalmic surgery presents many unique challenges , in addition to possessing technical expertise. The anesthesiologist must have detailed knowledge of ocular anatomy, physiology, and pharmacology. It is essential to appreciate that ophthalmic drugs may significantly alter the reaction to anesthesia , and that concomitantly anesthetic drugs and maneuvers may dramatically influence intraocular dynamics ***(McGoldrick and Gayer, 2006) .***

In the past few years there have been many changes in ophthalmic anesthesia. Application of drugs in general anesthesia with excellent controllability enhances patient safety and allows a more efficient operating room management. Regional anesthesia is gaining widespread use for ophthalmic surgery, especially topical anesthesia for cataract surgery ***(Weight et al., 2003) .***

General anesthesia for eye surgery presents a number of special considerations for the anesthetist. Patients are frequently at the extremes of age and in the case of the elderly concomitant medical conditions are not uncommon, particularly diabetes and hypertension. Drugs used in ophthalmology may influence the course of anesthesia ***(Varvinski and Eltringham, 1998) .***

Cataract surgery is the commonest ophthalmic operation performed under regional anesthesia. Eighty percent of patients presenting for cataract surgery are >70 yr of age and 57% have pre-existing medical problems. Regional anesthesia is therefore preferable as it should be associated with lower morbidity and cause minimal disruption to daily routine ***(Gordon, 2006) .***

Ophthalmic regional anesthetic techniques include traditional needle-based blocks, such as **intraconal** or **extraconal** , **sub-Tenon's** blocks which can be accomplished with needles, but are more commonly performed with blunt cannulae, and topical anesthesia. Needle-based techniques are generally safe although rare serious sight, and life-threatening complications may occur. In recent years, a renewed interest in sub-Tenon's and topical anesthesia has emerged. Currently there is no absolutely safe ophthalmic regional block. It is essential that those who are involved in the care of ophthalmic patients have a thorough knowledge of the approaches employed and their associated risks and benefits ***(Gayer and Kumar, 2008)*** **.**

Aim of the work

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The aim of the work is to review anatomy, physiology and recent trends in anesthesia of eye surgery.

Anatomy and physiology of eye

Anatomy of eye

With all anesthetic techniques, knowledge of the anatomy is essential. Anatomy of the orbit and its nerve supply is necessary to the safe practice of ophthalmic regional anesthesia ***(Beard and Quikert , 1988)*** **.**

Eye lids:

Eye lids protect the eye from injury and assist in the distribution of tears over the anterior surface of the eyeball. They are covered in front with loose skin and behind with adherent conjunctiva. The orbicularis oculi muscle lies in front of the orbital septum. The eyelids meet at the medial and lateral angles (or canthi) . The lateral canthus is in direct contact with the eye ball. The medial canthus is separated by a small triangular space ***(Sinnatamby , 2006)*** **.**

The conjunctiva:

Is a mucous membrane consisting of a nonkeratinized squamous epithelium. 'the conjunctivae can be divided into three geographic zones: palpebral, fornical , and bulbar. **The palpebral part** begins at the mucocutaeous junction of the eyelid and covers its inner surface, this part adheres firmly to the tarsus. The tissue becomes redundant and freely movable in the fornices **(fornical conjunctive) .** The conjuctiva is reflected at the clu- de –sac and attaches to the globe. The delicate **bulbar conjunctiva** is freely movable but fuses with Tenon's capsule and inserts into the limbus ***(Gray et al ., 2005)*** **.**

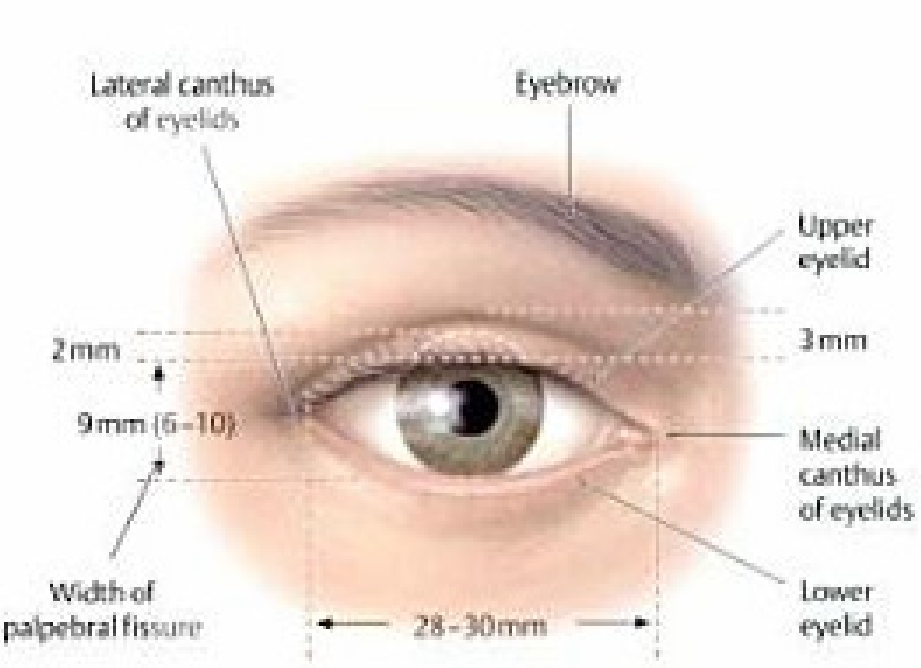

Fig. (1-1) : Anatomy of Eye lid. ***(Schunke et al ., 2007)***

Lacrimal apparatus:

The production of tears and the removal of excess tears is the function of the lacrimal apparatus, which consists of the lacrimal gland, lacrimal canaliculi, lacrimal sac and the nasolacrimal duct.

Lacrimal gland:

This is a serous gland with a large orbital and a small palpebral part. Under normal conditions the lacrimal gland secretes just enough tears to replace those lost by evaporation. The lacrimal sac lies in the lacrimal groove formed by the maxilla and lacrimal bone, crossed in front by the medial palpebral ligament, and some of the palpebral fibres of orbicularis oculi are inserted into the wall of the sac ***(Sinnatamby , 2006)***