ANAESTHESIA RELATED DEATHS

2021

- It is important to ascertain the contribution of anesthesia to perioperative mortality in order to enable improvement in the safety and quality of care.
- Scanty literature regarding anesthetic mortality from developing countries.

- Anaesthetic death is defined as death occurring within 24 hours of administration of anaesthesia due to causes related to anaesthesia.
- However, death may occur even afterwards due to its complications.

Risk

- The risk and complication of anaesthesia contributes only 08% of total deaths of which
- Overdose,
- Maladministration,
- Bad choice of anesthetic agent &
- Equipment failure are the important reason behind such casualties

Causes of Anaesthetic Deaths:

1. **Death due to Anaesthetic Agent:**

- Hypersensitivity or adverse effects of anaesthetic agents causing cardiac arrthymia/arrest or

- Respiratory failure due to myo-neuronal blockage and rarely by liver necrosis and malignant hyperthermia as in cases of halothane administration.

2- Death due to Anaesthetists (Human Error):

- Improper techniques & equipments,
- Lack of experience, gross negligence in precautions,
- Careless in method,
- Accidents during intubation/bronchoscopy,
- Over dose of drugs and improper pre-anaesthetic medication.

3- Deaths due to Equipment Failure:

- Malfunction of apparatus, kinked pipes, cross tubes, explosion etc.

4- Deaths due to Functional Problems:

- Vagal inhibition, obstruction to glottis, cardiac arrthymia, hypotension, sluggish reflex action as in unconscious patients.

5- Death due to factors other than Anaesthesia;

- Disease/injury for which anaesthesia and operation is being done,
- Surgical mishappening (unintentional cutting/tearing of large blood vessels),
- Postoperative events (phelebothombosis, pulmonary embolism, aspiration),
- Physical condition of patient (old age, diabetes, hypertension),
- Inadequate communication between staff and
- Unforeseeable conditions e.g. haemoglobinopathies (sickle cell anemia), occult coronary artery disease, transfusion hepatitis, and AIDS.

Mechanism of death

- This all leads to cardiac arrest or asphyxia due to respiratory failure.
- Cardiac arrest is the commonest, occurs due to oxygen depletion or carbon dioxide accumulation due to fault/failure in technique

Mechanism of death Ct

- Asphyxia of myocardium, overdose of anaesthetic agents & reflex vagal stimulation are the three most common patho-physiological events by which cardiac arrest become supervenes.

Respiratory failure

- Respiratory failure usually occurs to overdose of premedication drugs (Barbiturates, Benzodiazepines, morphine etc.) or anaesthetic agents,
- Administration of opiates during postoperative period,
- Laryngospasm/bronchospasm of varying reasons with hypoventilation and subsequent hypoxia.
- Due to hyperventilation by anesthetic agents.

Medico-legal Aspects related to Anaesthetic Deaths and Malpractice:

- Doctor's duty in Anaesthetic Practices:
- Anaesthetist must attend the patient a day before surgery, do Pre Anaesthetic Check-up and investigate the patient for any alarming situations if required.
- He must record everything on the case sheet.

Informed Consent:

- Before administration of anaesthesia, the Anaesthetist must take the consent in writing from the patient or his legal guardian/parents.

Reasonable Degree of Skill & Care:

- The duty of Anaesthetist starts when the patient, his surgeon or nursing home/hospital approaches the anaesthetist and he accepts the work.
- It is the duty of the anaesthetist to attend the patient, assess him and optimize the patient with necessary investigations and treatment.

BURDEN OF PROOF

- The burden of proving that the anaesthesiologist was negligent falls on the complainant.
- Court allows both parties to prove their case by means of producing evidence.
- This may include records, books, journals or expert witnesses.

Precaution & Defense:

- Anaesthetist should update his professional knowledge all the time, keep full and accurate records of his patients.
- He must check the instruments prior to use do the sensitivity test for a drug known to cause anaphylactic reactions and do not leave patient till recovered from effect of anaesthesia.

Bolam's Law

- When an anaesthetist is sued for negligence, he can defend himself by proving that he has applied reasonable degree of skill & care during anaesthetic procedures.
- A doctor is not negligent if he is acting in accordance with a practice accepted as PROPER by responsible body of medical men skilled in that art even though other doctors adapt a different practice". This is the Bolam's Law.

- The damage to the patient may also occur due to error in judgment, therapeutic misadventure, medical mal-occurrence, unforeseeable harm or when a new disease appears but doctor is not liable as long as he applied a reasonable standard of skill and care.

Investigation and Examination of Anesthetic Death:

- As per the penal code, all deaths occurring in due course of surgery and anaesthesia should be treated as unnatural deaths and should be reported to the police.
- Failing of which the doctor can be punished under for intentional omission to give information of offence to police by the person who is bound to inform.

The American Society of Anesthesiologists (ASA) classification

- Class 1 - 3 requires full medico-legal investigation.
- Class 4 and 5, where death is anticipated, there is less need for full investigation.

Autopsy Examination & Procedure:

- A number of difficulties are encountered during the examination and interpretation of anaesthetic deaths.
- Naked eye changes may be minimal or absent in autopsy examination,
- The findings of surgery and anaesthesia may superimposed on pre-existing natural disease or trauma and
- No communication between forensic person conducting autopsy with concerned anesthetists and surgeons, especially in our scenario.

It is advised that:

1. Autopsy is performed without delay. Medical intervention **should be left intact** by medical & nursing staff.
2. Relevant clinical case notes, x-rays, laboratory tests etc. should be studied prior to autopsy.
3. Professional first hand discussions with anaesthetist and surgeon involved are encouraged. They should be invited to attend autopsy and to discuss the findings politely.
4. For further investigations relative specimens e.g. toxicology, histology, biochemistry, and microbiology should be retained appropriately.

Conclusions

- Anaesthesiologist must know and follow a reasonable standards expected of them by the public, their profession and the law.
- He should assess, optimize and assure the patient before taking up for surgery.

- For the investigation of cause of death discussion between forensic pathologist, surgeon and anaesthetist may arrive at an amicable conclusion that will be the best consensus of opinion to offer the investigating authority and courts of law.

The end