

## 6. ANAESTHESIA IN THE ELDERLY

Many geriatric surgeries are performed as a result of increasing longevity. In geriatric patients there is reduction of cardiovascular, respiratory, renal and liver functions. There is very little functional reserve (difference between the basal and maximal function of organs) which is safety margin available to the patient during anaesthesia and the post-operative period and contributes to the increased morbidity and mortality.

The major risk factors in the elderly are:

- ❖ Poor general condition
- ❖ Severity of co-morbid conditions
- ❖ Major surgery
- ❖ Emergency surgery

Anaesthesia should be safe with smooth induction, maintenance and quick reversal without producing any CVS, RS, and CNS complications.

### **Choice of anaesthesia**

- ❖ Depends on the patient's general condition
- ❖ Nature of surgical procedure
- ❖ The experience of the Anaesthetist

### **Types of anaesthesia**

- General anaesthesia
- Regional anaesthesia - spinal / epidural / local

For the elderly local / regional anaesthesia is given by way of infiltration, field or nerve blocks, and epidural or spinal, may be an attractive and safer option in selected cases.

### **Local anaesthesia**

Types are topical and infiltration

Topical anaesthetic agents are used on the skin, urethra, nasal mucosa and cornea

Infiltration anaesthesia for very small lesions / biopsies 1% lignocaine into / around the tissues to produce analgesia

Easily administered

Starvation not required

Test dose should be given before infiltration

Contraindicated in local infection and in coagulation disorders

### **Regional anaesthesia**

Regional anaesthesia is commonly administered in elective surgeries in the elderly. Regional anaesthesia involves blockade of major nerve trunks which innervates the site of surgery. The two

types of regional anaesthesia are spinal and epidural. In spinal anaesthesia the drug is injected into the subarachnoid space (intrathecal) and in epidural anaesthesia the drug is injected into epidural space. In the elders local / regional anaesthesia is preferred for the following reasons

- ◆ Advantageous in debilitating respiratory disease patients
- ◆ Reduces bleeding, postoperative respiratory problems and deep vein thrombosis
- ◆ Diminishes stress response and CNS complications
- ◆ Decreases convalescence time and facilitates early ambulation
- ◆ Minimizes requirements of postoperative analgesia.
- ◆ Reduces mortality.

### **Disadvantages**

Technically difficult

Epidural is less reliable

Supplemental sedation (compensation for inadequate RA ) carries great dangers like air way obstruction, pulmonary aspiration and agitation.

### **Single dose anaesthesia**

A single dose epidural or spinal anaesthesia is used to provide short period of very effective analgesia during operation.

### **Continuous epidural anaesthesia**

A sterile epidural catheter is inserted into the epidural space and anaesthetic agent is injected at regular intervals and analgesia provided for many hours or even days. This is particularly valuable in patients with poor respiratory functions in abdominal or thoracic surgeries.

### **General anaesthesia**

GA is faster and reliable in elders sometimes it may not be possible to insert endotracheal tube due to cervical problem and tracheal narrowing.

### **Disadvantages**

Difficult intubation

Myocardial depression

CNS complications

### **The common cause of failure to breathe after general anaesthesia are**

- Obstruction of the airways
- Central sedation from opioid drugs or anaesthetic agents
- Hypoxia or hypercarbia of any cause
- Hypocarbia from mechanical overventilation
- Persistent neuromuscular blockade
- Pneumothorax from pleural damage during anaesthesia surgery
- Circulatory failure leading to respiratory arrest.

## **Intraoperative management**

### **Monitoring of vital parameters**

Monitor continuously the vital parameters-pulse, blood pressure, respiratory rate, ECG, oxygen saturation and urine out put and immediate intervention done to prevent postoperative complications.

The three factors which are interlinked to each other and produce combined ill effects leading to life threatening complications in the elderly are described below.

- ◆ Hypotension
- ◆ Hypoxia
- ◆ Hypothermia

### **Hypoxia**

The PaO<sub>2</sub> decreases with increasing age due to hypoventilation-pulmonary dysfunction and anaesthetic drugs like opioids, muscle relaxants and CNS depressants. Continuous intraoperative oxygen administration and monitoring by pulse oximetry during surgery will prevent hypoxia.

### **Hypothermia**

Elderly patients are prone to hypothermia during surgery. The body temperature is labile and there is heat loss in the operating room under general anaesthesia. The older patient is often cold after lengthy procedures. During major surgeries core temperature should be measured by trans-esophageal thermometer. Suitable preventive action by way of sheets, blankets and thermal pads may be used to prevent and treat hypothermia.

### **Hypotension**

In older patients hypotension occurs in many ways. During surgery there may be acute loss of blood volume and if not corrected early, will lead to severe hypotension which may be irreversible leading to shock and death. Anaesthetic drugs and muscle relaxants may lead to profound vasodilatation and a lot of fluid is diverted to extra cellular space. The fluid loss is poorly tolerated in older patients and continuous BP monitoring, pulse oximetry and appropriate fluid infusion (25to30ml/kg body weight) are essential. Hypotension causes poor perfusion.

Intravenous fluid infusion has to be carefully regulated as both under and over correction is not well tolerated. In elders undergoing major and risky operations, measurement of CVP and urinary output are desirable. A careful watch should be kept on the heart rate, heart rhythm, blood pressure and oxygen saturation, so as to recognize and correct any abnormality immediately.

### **Key points**

- ☞ Advancing age is not a contraindication to anaesthesia or major surgery
- ☞ Screening and preparation of the patient is essential before anaesthesia
- ☞ Enquire about allergy to drugs, previous surgery and anaesthesia
- ☞ Examine oral cavity for loose tooth and dentures, tracheal position and spine for mobility, narrowing and kyphoscoliosis.
- ☞ Adjust anaesthetic and other drug doses based on lean body weight in obese
- ☞ Maintain cardio respiratory, renal function and glycaemic control
- ☞ Initiate invasive monitoring if required
- ☞ Avoid hypoxia, hypotension and hypothermia during anaesthesia.
- ☞ Reduce exposure to known risk factors for acute organ failure especially acute renal failure.
- ☞ Ensure quick reversal without CNS complication.
- ☞ Be prepared to convert from spinal to general if required
- ☞ Continue monitoring and ventilate electively in postoperative period to optimize recovery
- ☞ Discuss with the surgeon / patient / patient's relatives regarding the anaesthetic risk and complication and get written consent .