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## **MANAGEMENT OF CRISES DURING ANESTHESIA AND SURGERY. PART XIII: REGIONAL ANESTHESIA**

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**R**egional anesthesia is broadly utilized and has been considered to pose few risks once the block is set up. However, dangerous issues can happen both during the establishment and maintenance periods of a regional block which require prompt recognition and management. The risks includes; local anesthetic toxicity<sup>1,2</sup>, misdirected or misplaced needles and cannulae, and a variety of other problems both amid and after blockade can lead to morbidity or mortality<sup>3-5</sup>. Some of these may be obscure and not related to the regional anesthetic method itself.

As problems need to be immediately recognized and managed, it was decided to examine the role of an organized way to deal with such issues emerging in relation with regional anesthesia.

Regional anesthesia is consumed mainly in epidural, spinal, ophthalmic block, brachial plexus block, Bier's block, caudal, cervical plexus block, and many other types specially after the introduction of the ultrasound guided blocks. Absorption of local anesthetics (most to least); intravenous, intercostal, caudal epidural, lumbar epidural, brachial plexus, and subcutaneous.

### **Signs and symptoms**

Hypotension and dysrhythmias are the most commonly happening problems that occur mainly in epidural/spinal anesthesia. relative overdose of local anesthetic agent, or coincidental subarachnoid injection with an epidural may all set the stage for a fatal outcome.

Toxicity may be local or systemic, however proper observation of the patient can help in its early detection. Toxicity can present as<sup>6</sup>: effects on CNS, cardiovascular, hematologic, allergic and local tissue effects.

*The* CNS excitement early symptoms of systemic toxicity includes: Circumoral with or without lingual numbness, metallic taste, lightheadedness, dizziness or drowsiness, and tinnitus.

Higher doses often lead to: Loss of consciousness, respiratory depression or arrest, and cardiovascular depression or collapse.

### **EMERGENCY MANAGEMENT<sup>7-10</sup>**

\*Reassure the patient, and sedate if appropriate

\*Ventilate with 100% oxygen

\*Inform the surgeon as to the nature of the problem.

\*Treat if hypotensive or bradycardic. Do Basic and Advanced Cardiac Life Support. Avoid vasopressin, calcium channel blockers, beta blockers, or local anesthetics. Reduce epinephrine doses to <1 mcg/kg.

\*Do not hesitate to treat as cardiac arrest

\*Lipid Emulsion (Intralipid 20%) therapy bolus 1.5 mL/kg intravenously over 1 minute and continuous infusion 0.25 mL/kg/min. Repeat bolus once or twice for persistent cardiovascular collapse. Double the infusion rate to 0.5 mL/kg/min if blood pressure remains low.

### Review and treat probable causes<sup>2</sup>

High block (aspirate CSF from epidural?)

Drug errors: Wrong drug, concentration, volume or site

Ensure: fluid, drug and infusion rates are correct.

For suspected local anaesthetic toxicity<sup>3</sup>, Give phenytoin 15 mg/kg over 30 minutes for CNS irritability. Control seizures with 50-100 mg of thiopentone but beware of cardiovascular compromise, or use benzodiazepines which are preferred, avoid propofol in patients having signs of cardiovascular instability.

Assess the block<sup>2,4,5</sup>

\*If inadequate, consider second attempt or general anesthesia, local infiltration or further local anesthetic down the epidural catheter<sup>2,4</sup>.

\*If excessive, administer oxygen and assist ventilation if required<sup>3,5</sup>

\*Consider needle/catheter problems<sup>6</sup> in epidural & spinal: Wrong site, hematoma, nerve damage, pneumothorax and pain.

**Further care:** Confirm and correct cause, review patient to determine delayed events<sup>5,6</sup>. encourage the patient and arrange follow-up.

### NOTES

Of all incidents involving regional anesthesia, 78% were either epidural or spinal anesthesia related<sup>1,10</sup>.

1. Hypotension and arrhythmia in spinal/epidural incidents reported accounted for 30% of all regional anesthesia incidents, and the deaths in 2%. They involved a combination of high block and or hypovolemia.
2. Local anesthetic toxicity was reported in 10% of all cases.
3. Failed blocks : 5% of all regional anesthesia incidents.
4. Overdose/total spinal: 10% of all regional anesthesia incidents.
5. Trauma, infection or pain was reported in 6% of cases.
6. Pregnant women are prone to cardiotoxicity with Bupivacaine overdose
7. Methemoglobinemia: A side effect unique to prilocaine at doses of at least 600mg. treated with methylene blue
8. Beware tourniquet failure with Bier's blocks.

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