

Obstetrics

Lec. 4

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المرحلة الرابعة

Methods of labor analgesia

pain : defined as unpleasant sensation , subjective sensory and emotional experience associated with real or potential tissue damage , although pain may be considered the physiological consequence of normal labor , it may be the harbinger of pathological process such as obstructed labor , fetal malposition , uterine hyper stimulation and uterine rupture .

Severe pain stimulate sympathetic autonomic response which is exacerbated by dehydration and exhaustion , it is characterized by hyperventilation , tachycardia , hypertension , increase O₂ and glucose consumption , vasoconstriction with decrease blood flow across the placenta that lead to decrease fetal oxygenation

Non regional analgesia for labor

-Non pharmlological method of pain relief include:-

Antenatal education , acupuncture , water immersion , massage and other relaxation techniques .

-Pharmlological methods include :-

Entonox (50% N₂O in O₂)quick onset , short duration of effect by inhalation

Systemic opioid : Diamorphin ,Pathedin ,Remifantnil

Complications :- nausea ,vomiting ,drowsiness and sedation , delayed gastric emptying , short term respiratory depression of the neonate , possibility of interfering with breast feeding .

Regional analgesia

Epidural analgesia (extradural):- is the reliable mean of providing effective analgesia in labor

Possible regional anesthesia techniques include epidural analgesia, spinal analgesia (sometimes referred to as the intrathecal or subarachnoid space), or a combination of epidural and spinal analgesia.

Uterine contractions and cervical dilatation result in visceral pain. These pain impulses are transmitted by afferent, slow conducting sympathetic nerves and enter the spinal cord at the T10 to L1 level. As labor progresses, the descent of fetal head and subsequent pressure on the pelvic floor, vagina, and perineum, generates somatic pain, which is transmitted by the pudendal nerve (S2-4). These rapidly conducting somatic pain fibers are relatively difficult to block

In obstetric patients, regional analgesia refers to partial or complete loss of pain sensation below the T8 to T10 spinal level. In addition, a varying degree of motor block may be present, depending on the agents used. Advantages of regional analgesia include the following

- Provides superior pain relief in first and second stages of labor
- Facilitates patient cooperation during labor and delivery
- Provides anesthesia for episiotomy and instrumental delivery
- Allows extension of anesthesia for cesarean delivery

- Avoids opioid-induced maternal and neonatal respiratory depression from intravenous opioids
- Besides providing analgesia in labor, regional analgesia may facilitate atraumatic vaginal delivery of twins, preterm neonates, and neonates with breech presentation.
- It also helps control blood pressure in women with preeclampsia by alleviating labor pain, and it blunts the hemodynamic effects of uterine contractions and the associated pain response in patients with other medical complications

Contraindications

Regional anesthesia is contraindicated in the

- presence of actual or anticipated serious maternal hemorrhage and refractory maternal hypotension,
- coagulopathy and anticoagulant therapy
- untreated bacteremia,
- raised intracranial pressure,
- skin or soft tissue infection at the site of the epidural or spinal placement
- Regional analgesia is also contraindicated in cases of patient refusal or inadequate practitioner training and experience
- As exacerbation of neurological diseases might be attributed without cause to the anesthetic agent, many clinicians avoid regional anesthesia in its presence
- Other maternal conditions such as aortic stenosis, pulmonary hypertension, or right-to-left shunts are also relative contraindications to the use of regional analgesia. Only opioids

could be used for labor analgesia in these situations, as they do not decrease systemic vascular resistance.

For patients with mitral stenosis, regional analgesia (epidural) is the preferred method

In women with **severe preeclampsia**, analgesia is controversial due to Obstetrical concerns that ***regional analgesia*** include ***hypotension*** induced by sympathetic blockade, danger from pressor agents given to correct hypotension, and potential for pulmonary edema following infusion of large volumes of crystalloid

Conversely, ***general anesthesia*** with tracheal intubation may result in severe sudden hypertension, further complicated by cerebral or pulmonary edema or intracranial hemorrhage

Over the past 2-3 decades, most obstetric anesthesiologists have come to favor epidural blockade for labor analgesia in women with severe preeclampsia.

Currently, practitioners routinely perform regional analgesia with platelet counts below 100,000, although few will instrument the spinal/epidural space if the platelet count is below 50,000. Several studies have reported no complications in women with platelet counts between 50,000-100,000

Special precautions are needed for patients taking anticoagulants to avoid epidural or spinal hematoma

Anesthesia

Spinal anesthesia (or spinal anesthesia), also called spinal block, subarachnoid block (SAB), intradural block and intrathecal block, is a form of regional anesthesia involving injection of a local anaesthetic into the subarachnoid space, generally through a fine needle, usually 9 cm long (3.5 inches).

For extremely obese patients longer needles are available (12.7 cm / 5 inches).

Spinal anesthesia is the technique of choice for Caesarean section as it avoids a general anesthetic and the risk of failed intubation (which is approximately 1 in 250 in pregnant women). It also means the mother is conscious and the partner is able to be present at the birth of the child. The post-operative analgesia from intrathecal opioids in addition to non-steroidal anti-inflammatory drugs is also good.

If surgery allows, spinal anaesthesia is very useful in patients with severe respiratory disease e.g. COPD as it avoids intubation and ventilation. It may also be useful in patients where anatomical abnormalities may make tracheal intubation very difficult.

Contraindications

Non-availability of patient's consent

Local infection or sepsis at the site of lumbar puncture

Bleeding disorders thrombocytopenia, or systemic anticoagulation (secondary to an increased risk of a spinal epidural hematoma)

Space occupying lesions of the brain

Anatomical disorders of the spine

Hypovolaemia e.g. following massive haemorrhage, including in obstetric patients

Risks/Complications

Can be broadly classified as immediate (on the operating table) or late (in the ward or in the P.A.C.U. post-anaesthesia care unit):

Hypotension (Spinal shock) - Due to sympathetic nervous system blockade. Common but usually easily treated with intravenous fluid and sympathomimetic drugs such as Ephedrine, Phenylephrine

Post dural puncture head ache (PDPH) or post spinal head ache - Associated with the size and type of spinal needle used

Cauda equina injury - very rare, due to the insertion site being too high

Cardiac arrest - very rare, usually related to the underlying medical condition of the patient

Spinal canal haematoma, with or without subsequent neurological sequelae due to compression of the spinal nerves. Urgent CT/MRI to confirm the diagnosis followed by urgent surgical decompression to avoid permanent neurological damage

Epidural abscess, again with potential permanent neurological damage. May present as meningitis or an abscess with back pain, fever, lower limb neurological impairment and loss of bladder/bowel function. Urgent CT/MRI confirms the diagnosis followed by antibiotics and urgent surgical drainage .

THANKS