Obstetrics and Gynecology
Pain relieve in labour

University Of Fallujah
College Of Medicine

Lecture : 5

Stage : 4th Year

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Learning objectives:

1. know the pharmacological and non-pharmacological methods of pain relieve in labour.
2. know the main side effect of common drugs.
3. Review different methods of regional anesthesia used during labour.
4. Review of main complication of regional anesthesia.

Pain relieve in labour

Non-pharmacological methods

1. One-to-one care in labour from a midwife alongside a supportive birth partner shown to reduce the need for analgesia.
2. Relaxation and breathing exercises may help the woman to manage her pain.
3. Acupuncture and hypnosis sometimes employed, but their use has not been associated with a significant reduction in pain scores.

4. Relaxation in warm water during the first stage of labour often leads to a sense of wellbeing and allows women to cope much better with pain. The temperature of the water should not exceed 37.5°C.

5. Transcutaneous electrical nerve stimulation (TENS) works on the principle of blocking pain fibres in the posterior ganglia of the spinal cord by stimulation of small afferent fibres. It may be of use in the latent phase of labour and by women at home. It shown to be ineffective in reducing pain scores.

Pharmacological methods

Opiates, such as pethidine and diamorphine, still the most popular methods use by many obstetric units even without the involvement of medical staff. They should be available in all birth settings but they provide only limited pain relief during labour and furthermore may have significant side effects.

Side effects of opioid analgesia

- Nausea and vomiting (they should always been given with an antiemetic).
- Maternal drowsiness and sedation.
- Delayed gastric emptying (increasing the risks of general anaesthesia).
- Short-term respiratory depression of the baby.
- Possible interference with breastfeeding.

Opiates usually given as intramuscular injections; however, an alternative is a subcutaneous or intravenous infusion by a patient-controlled analgesic device (PCA). This allows the woman, by pressing a dispenser button, to determine the level of analgesia that she requires.

If a very short-acting opiate is used, the opiate doses can be timed with the contractions.

This method of pain relief is particularly popular among women who cannot have an epidural and find nonpharmacological options insufficient.

Inhalational analgesia

Nitrous oxide (NO) in the form of Entonox® (an equal mixture of NO and oxygen) is available on most labour wards. It has a quick onset, a short duration of effect and is more effective than pethidine. It may cause light-headedness and nausea. It is not suitable for prolonged use from early labour because hyperventilation may result in hypocapnoea, dizziness and, rarely, tetany and fetal hypoxia. It is most suitable later on in labour or while awaiting epidural analgesia.

Epidural analgesia

Epidural (extradural) analgesia is the most reliable means of providing effective analgesia in labour. The decision to have an epidural sited should be a combined one between the woman, her midwife, the obstetric team and the anaesthetist.

The woman must be informed about:

- the benefits and risk.
- It is important to warn the woman that she may lose sensation and movement in her legs temporarily.
- Intravenous access and a more intensive level of maternal and fetal monitoring will be necessary, for example with continuous EFM (the CTG).

The epidural analgesia does not increase caesarean section rates and in certain clinical situations, an epidural in the second stage of labour may assist a vaginal delivery by relaxing the woman and allowing time for the head to descend and rotate. However, the second stage is longer and there is a greater chance of instrumental delivery, which may be lessened by a longer passive second stage awaiting a maternal urge to push.

An epidural will limit mobility and for this reason, it is not ideal for women in early labour. Unless having severe pain.

Indications of epidural analgesia

There are other maternal and fetal conditions for which epidural analgesia would be advantageous in labour apart from pain relieve. These include:

- ❖ Prolonged labour/oxytocin augmentation.
- ❖ Maternal hypertensive disorders.
- ❖ Multiple pregnancy.
- ❖ Selected maternal medical conditions.
- ❖ A high risk of operative intervention.

Contraindications of epidural analgesia

- Coagulation disorders (e.g. low platelet count).
- Local or systemic sepsis.
- Hypovolaemia.
- Logistical: insufficient numbers of trained staff (anaesthetic and midwifery).

Complications of epidural analgesia

- Accidental dural puncture during the search for the epidural space in no more than 1% of cases.
- If the subarachnoid space accidentally reached with an epidural needle, this may allow leakage of cerebrospinal fluid (CSF) and results in a ‘spinal headache’. This is characteristically experienced on the top of the head and is relieved by lying flat and exacerbated by sitting upright. If the headache is severe or persistent, a blood patch may be necessary. This involves injecting a small volume of the woman’s blood into the epidural space at the level of the accidental dural puncture. The resulting blood clot thought to block off the leak of CSF.

- Bladder dysfunction can occur if the bladder allowed to overfill because the woman is unaware of the need to micturate, particularly after the birth. Overdistension of the detrusor muscle of the bladder can permanently damage it and leave long-term voiding problems. To avoid this, catheterization of the bladder carried out during labour.
- Hypotension can occur with epidural analgesia, although it is more common with spinal anaesthesia. It usually be corrected with fluid boluses, but may need vasopressors. Occasionally, maternal hypotension will lead to fetal compromise.

- Accidental total spinal anaesthesia (injection of epidural doses of local anaesthetic into the subarachnoid space) causes severe hypotension, respiratory failure, unconsciousness and death if not recognized and treated immediately. The mother requires intubation, ventilation and circulatory support. Hypotension treated with intravenous fluids, vasopressors and positioning of the woman onto her left side. In some cases, urgent delivery of the baby may be required to overcome aorto-caval compression and so permit maternal resuscitation.

- Spinal hematoma and neurological complications are rare, and are usually associated with other factors such as bleeding disorders.
- Drug toxicity can occur with accidental placement of a catheter within a blood vessel. This normally noticed by aspiration prior to injection.
- Short-term respiratory depression of the baby is possible because all modern epidural solutions contain opioids, which reach the maternal circulation and may cross the placenta.

Technique

1. The woman back cleansed and local anaesthetic is used to infiltrate the skin.
2. The woman may be in an extreme left lateral position, or sitting upright but leaning over. Flexion at the upper spine and at the hips helps to open up the spaces between the vertebral bodies of the lumbar spine.
3. The epidural catheter normally inserted at the L2–L3, L3–L4 or L4–L5 interspace and should come to lie in the epidural space, which contains blood vessels, nerve roots and fat. The catheter is aspirated to check for position and, if no blood or CSF is obtained, a ‘test dose’ is given to confirm the catheter position.

4. After 5 minutes from the testing dose a loading dose can be administered.

5. The epidural solution is usually a mixture of low-concentration local anaesthetic (e.g. 0.0625–0.1% bupivacaine) with an opioid such as fentanyl. Combining the opioid with the local anaesthetic reduces the amount of local anaesthetic required and this reduces the motor blockade and peripheral autonomic effects of the epidural (e.g. hypotension).

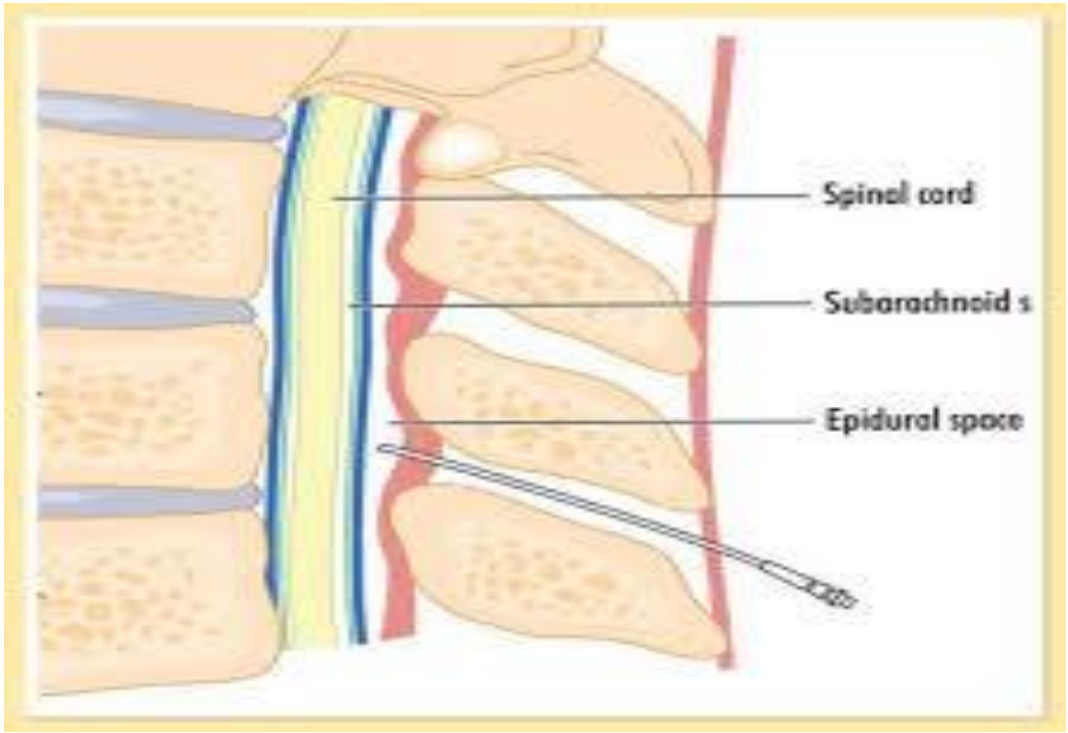
6. After the loading dose is given, the mother should be kept in the right or left lateral position, and her blood pressure should be measured every 5 minutes for 15 minutes. A fall in blood pressure may result from the vasodilatation caused by blocking of the sympathetic tone to peripheral blood vessels. This hypotension is usually short lived, but may cause a fetal bradycardia due to redirection of maternal blood away from the uterus. It should be treated with intravenous fluids and, if necessary, vasoconstrictors such as ephedrine.

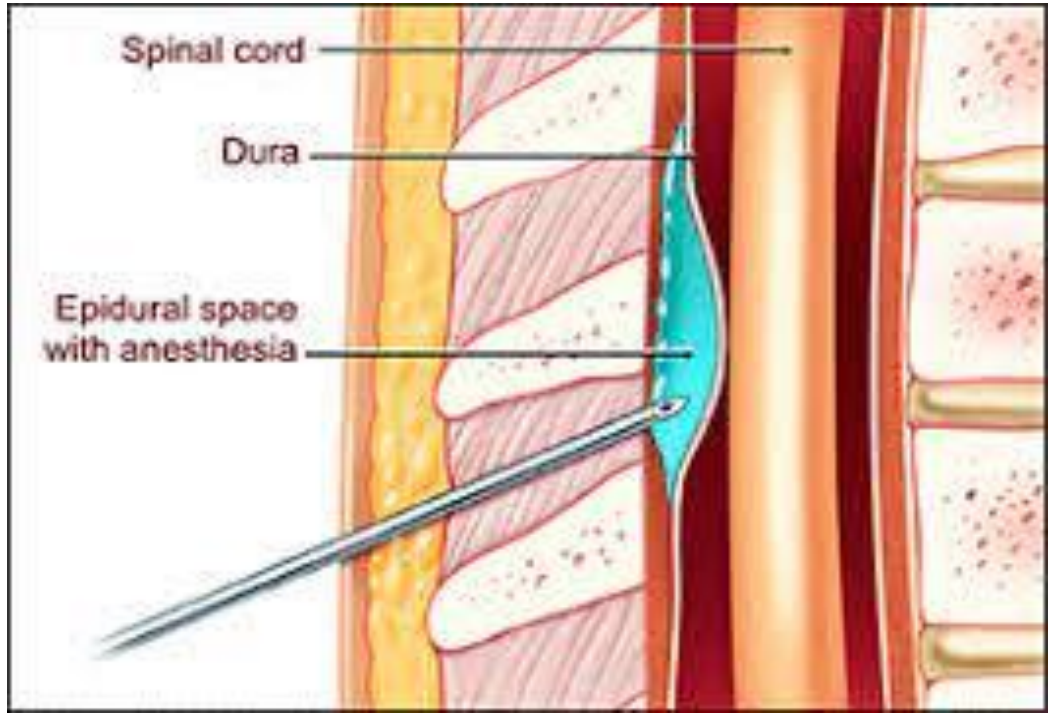
7. Regional analgesia can be maintained throughout labour with either intermittent boluses or continuous infusions.

8. Regional anaesthesia should continue until after completion of the third stage of labour, including repair of any perineal injury.

Spinal anaesthesia

A spinal block is considered more effective than that obtained by an epidural, and is of faster onset. A fine-gauge atraumatic spinal needle is passed through the epidural space, through the dura and into the subarachnoid space, which contains the CSF. A small volume of local anaesthetic is injected, after which the spinal needle is withdrawn.


Spinal cord
Subarachnoid s
Epidural space


Spinal cord
Dura
Epidural space
with anesthesia

Spinal anaesthesia may use for:

- ❖ Caesarean sections.
- ❖ Trial of instrumental deliveries (in theatre).
- ❖ Manual removal of retained placenta.
- ❖ The repair of difficult perineal and vaginal tears.

Spinals are not used for routine analgesia in labour. Combined spinal–epidural (CSE) analgesia has gained in popularity. This technique has the advantage of producing a rapid onset of pain relief and the provision of prolonged analgesia.

THANK YOU