Epidural Analgesia

Introduction

Epidural analgesia is a “higher technology” pain management modality that allows safe and effective relief of severe pain. Administration of opioids and anesthetic medications into the epidural space has become a widely used modality in acute pain management. Epidural analgesia is selected when pain is severe or is expected to be severe and is associated with significant stress response. In some cases, attempts to achieve adequate analgesia by oral or intravenous (IV) routes of delivery may not be effective unless the opioid is given in significant doses often leading to intolerable opioid induced side effects. Epidural opioid dosages are generally a fraction of usual IV opioid dosages and offer extended duration of analgesic effectiveness. When the epidural opioid is delivered through an epidural catheter that is placed at the level of the incision / injury, the opioid can be delivered to the segment of the spinal cord where the pain stimulus arises, thus optimizing the quality and duration of analgesia and reducing systemic effects. The excellent analgesia provided by administering epidural opioids and anesthetics enables patients to comfortably perform activities of recovery. Overall, patients receiving epidural analgesia required significantly less analgesic medications and had better pain relief than those receiving parenteral opioids.

Pharmacokinetics and Dynamics of Epidural Opioids

The epidural space is located between the dura mater (the outermost membrane surrounding the spinal cord and cerebral spinal fluid) and the ligamentum flavum. The epidural space is technically a potential space and is actually filled with fatty tissue, epidural blood vessels, and spinal nerves as they pass through the space. When opioids are administered into the epidural space, the majority is distributed through the fatty tissue creating a depot or reservoir of opioid for vascular uptake. The remaining opioid then diffuses across the dura mater into the cerebral spinal fluid (CSF). Once in the CSF the opioids penetrate the pia mater and gain access to the dorsal horn of the spinal cord. The opioid attaches to receptors in the dorsal horn blocking the pain impulses as they ascend to the cerebral cortex. The most potent analgesia occurs at the site of administration. The dose volume and solubility of an opioid will determine how rapidly it moves through the epidural fat, crosses the dura membrane, and penetrates into the dorsal horn of the spinal cord. Solubility differences define whether an opioid will extend across multiple dermatomal levels or are restricted to specific dermatomal levels close to the site of incision or injury.

Lipophilic opioids

Lipophilic opioids, like fentanyl, spread quickly through the epidural fat and across the dural membrane. These opioids have a rapid onset of action with an associated rapid decline in effectiveness unless repeated doses or continuous infusion is used to maintain levels. Because lipophilic opioids spend less time in the epidural fat, their spread is limited and subsequently analgesia is provided to a limited number of dermatomal levels. This confined spread of opioid is referred to as segmental analgesia. Effective analgesia utilizing lipophilic opioids is best accomplished when the epidural catheter allows for injection or infusion very close to the dermatomal level of the surgical incision or site of injury.

Undesired medication effects

Opioids

Epidural administration of opioids may result in the same side effects commonly experienced with systemic administration. Monitoring for nausea and vomiting, pruritus, and sedation is indicated. Reducing the impact of these side effects on recovery activities and advancement of diet postoperatively must be a priority. Reduction of the opioid dose or concentration and administration of appropriate medications may be necessary to achieve rapid control of nausea and pruritus. Medications used to treat nausea and pruritus should avoid common antiemetics and antihistamines that have central nervous system depressing effects. These medications are often very sedating when administered alone and when combined with adequate dosages of opioids add a level of sedation that may precipitate a respiratory depression.

Anesthetics

Epidural anesthetic side effects include urinary retention, sensory and motor block beyond desired dermatomal levels, orthostatic hypotension, and anesthetic toxicity. If urinary retention persists, reduction of the rate of infusion or the concentration of the anesthetic may be necessary to allow return of sphincter tone.

Sensory and motor block that extends beyond the desired dermatomal levels may result in lower or upper extremity weakness. This side effect should be reported and treated aggressively to ensure a rapid recovery of motor strength. Often a reduction of the infusion rate or concentration of the anesthetic and / or withdrawal of the epidural catheter a few centimeters to improve the catheter tip position may correct lower extremity weakness. If unable to restore motor strength, removal of the anesthetic from the solution may be necessary. Unfortunately, this will also result in the loss of the excellent analgesia provided by the anesthetic opioid combination.

Orthostatic hypotension often results when epidural administration of anesthetic is combined with low intravascular volumes. This is a fairly common scenario with low intravascular volume associated with blood loss or dehydration. Adequate hydration is necessary in order to maintain optimal blood pressure when epidural anesthetics are administered. If volume status is stable and hypotension persists, a
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reduction in the infusion rate or concentration of the anesthetic is indicated. Side effects that occur when a combination of opioid and anesthetic are infused into the epidural space should be first treated with a reduction in the infusion rate.

Nursing Considerations for Epidural Clients

1. Current pain level should be assessed and documented with each visit. If the patient is not receiving adequate pain control, please call to obtain further orders.

2. Please report any of the following immediately: Temp > 100.5, blurred vision, photophobia, nuchal rigidity, dysuria, neuro changes or decreased ROM (i.e. Falls)

3. Patients should check their temperature 2x daily

4. Orthostatic blood pressures should be done with each visit.

5. Rebound hypertension can occur if the pump is turned off for any length of time. Patients are weaned off the drug during the last week of therapy prior to the catheter being discontinued.

6. NEVER use alcohol on or around the epidural or intrathecal catheter.

7. NEVER flush the epidural catheter with saline or heparin.

8. NEVER use scissors around the epidural catheter.

Failure to Accrue PTO

Have you looked at your pay stub recently? Are you continuing to accrue PTO if you are working the required number of hours?

Remember, if all Human Resources requirements are met, a person will accrue one-half hour of PTO if the person has worked at least twenty hours in that week and one hour of PTO if a person has worked at least thirty hours in that week.

If you are not accruing PTO, have you submitted the following:

- Certificate of Completion for DCFS Mandated Reporter on-line training
- Hepatitis B record or statement showing “due diligence,” a sincere effort to obtain the record

The State of Illinois requires that each employee complete the DCFS Mandated Report on-line training one time. The original deadline was 10/13/08. You may access the DCFS Mandated Reporter on-line training site by going to www.acch-1.com and clicking the link DCFS training. If you prefer, you may go to https://www.dcfstraining.org/manrep/index.jsp. Complete the entire training, and print off several copies of the Certificate of Completion. Fax or mail one copy to the office. Keep the other copy. It is worth 2 CEU’s.

The State of Illinois also now requires that each employee who has had the series of three Hepatitis B vaccinations submit the Hepatitis B record or a statement showing “due diligence,” a sincere effort to obtain the record. The statement must explain the efforts to gather the information. Describe the results. For example, pretend that you received the vaccinations twenty years. Did you discover that the company is no longer in business? Did you discover that employee health records are only kept for seven years after termination? At the beginning of your statement, explain where and when you received the vaccinations. Conclude by stating that you are unable to secure a copy of the record. Be sure to sign and date the statement. Fax or mail a copy of this statement to the office.

The deadline for submitting the Hepatitis B record was 12/1/09.

Remember that PTO is a benefit offered to employees. Don’t miss out on it!

Mailing Nursing Documents

American Home Health provides you with all the necessary mailing supplies for all your mailing needs. Nursing documents are to be mailed from the client’s home via mail and should never be taken outside the client’s home to be mailed later on.

Our policy on this subject reads: “All other documents must be in our office no later than seven (7) days after service has been rendered. This is a state law, and we must have your cooperation in order to comply with it. Employees who are consistently late or fail to comply with this law will be duly counseled and disciplined accordingly. Non-compliance of this policy and law may result in your termination.” Employee Handbook page 10

Following our policy will ensure timely arrival of all the necessary documents.