

Brief Note on Caudal Anaesthesia in Pediatric Patients: Its Indications, Techniques and Limitations

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DESCRIPTION

Paediatric patients often require surgery or painful procedures, and effective pain management is essential for their well-being. Caudal anaesthesia is a popular technique for pain management in paediatric patients undergoing lower abdominal, perineal, and lower limb surgeries.

Mechanism of action

Caudal anaesthesia involves the injection of local anaesthetic into the caudal epidural space, which is located at the base of the sacrum. Local anaesthetics such as bupivacaine or ropivacaine act by blocking nerve conduction, thereby preventing the transmission of pain signals from the lower part of the body to the central nervous system.

Indications

Caudal anaesthesia is commonly used in paediatric patients undergoing lower abdominal, perineal, and lower limb surgeries. It is particularly effective in infants and young children who are unable to tolerate general anaesthesia or systemic opioids. Caudal anaesthesia can also be used for the management of chronic pain conditions such as sickle cell disease and cancer.

Technique

Caudal anaesthesia is typically performed under sedation or general anaesthesia to ensure patient comfort and cooperation. The needle is inserted into the sacral hiatus under ultrasound or fluoroscopic guidance, and the local anaesthetic is injected slowly to ensure adequate distribution. The onset of analgesia is typically rapid, and the duration of analgesia can range from several hours to several days depending on the choice of local anaesthetic.

Benefits

Caudal anaesthesia offers several benefits over other pain management strategies in paediatric patients. It provides effective analgesia with minimal systemic effects, reducing the need for systemic opioids and their associated adverse effects. Caudal

anaesthesia also allows for earlier recovery and discharge, improving patient outcomes and reducing healthcare costs.

Side effects

Caudal anaesthesia is generally considered safe, with few side effects. The most common side effects include local anaesthetic toxicity, which can occur if excessive amounts of local anaesthetic are injected or if the injection is inadvertent into a blood vessel. Systemic toxicity can lead to cardiovascular and central nervous system effects, including arrhythmias, seizures, and cardiac arrest. Other potential side effects include bleeding, infection, and nerve injury.

Limitations

Caudal anaesthesia has several limitations that must be considered when selecting the appropriate pain management strategy. The duration of analgesia is limited, and caudal anaesthesia may not provide adequate pain control beyond the immediate postoperative period. The effectiveness of caudal anaesthesia is also dependent on the accuracy of needle placement and the distribution of local anaesthetic, which can be challenging in some patients.

Future directions

Several studies have investigated the use of adjuvants to local anaesthetics in caudal anaesthesia to prolong the duration of analgesia. Adjuvants such as opioids and alpha-2 agonists have been shown to improve analgesia and reduce the need for systemic analgesia. There is also growing interest in the use of continuous caudal anaesthesia, which involves the placement of a catheter into the caudal epidural space and the infusion of local anaesthetic for prolonged analgesia.

Caudal anaesthesia is a safe and effective technique for the management of postoperative pain in paediatric patients. It provides targeted pain relief and reduces the need for systemic analgesics. Caudal anaesthesia has few side effects, although local anaesthetic toxicity can occur. The effectiveness of caudal anaesthesia is limited by the duration of analgesia and the accuracy of needle placement.

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