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Research Article

EFFICACY OF LOW DOSE TRAMADOL WITH CAUDAL BUPIVACAINE FOR POST-OPERATIVE ANALGESIA IN PAEDIATRIC PATIENTS

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Abstract:

Aim: To determine the postoperative analgesic and potential caudal block side effects when the bupivacaine-tramadol combination is used at low doses.

Study design: A case series.

Place and Duration: In the Department of Pediatric Surgery and Anesthesia department of Nishtar Hospital Multan for one year duration from March 2019 to March 2020.

Methodology: All pediatric patients from 1 month to 12 years of age, both sexes, ASA I and II undergoing intracerebral surgery received a caudal block using a 0.25% bupivacaine combination at a dose of 0.5 ml / kg and tramadol 1 mg / Kg. Patients in whom caudal analgesia was contraindicated or unsuccessful were excluded from the study. Postoperative pain was assessed using the observer's pain scale and pain self-description in a child when he is over 2 years old. Requirements for emergency anesthesia were noted along with postoperative complications.

Results: A total of 48 people undergoing various infrared surgery (herniotomy, hypospadias repair, PPV ligation, orchidopexy, appendectomy, circumcision, etc.) received caudal block using a combination of bupivacaine and tramadol. All patients were pain free for over 12 hours. None of them required additional / rescue analgesia. No patient had postoperative complications such as respiratory depression, pruritus and urinary retention, while in a few cases nausea / vomiting was found.

Conclusion: The combination of low-dose bupivacaine with tramadol caudally form has an additive effect. This combination provides extended effective and safe postoperative analgesia with minimal side effects in children.

KEYWORDS: caudal block, bupivacaine, tramadol, postoperative analgesia

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INTRODUCTION:

In 1933, Campbell first identified a caudal block for pediatric urological intervention because it became the most effective regional anesthetic technique for use in children. Providing perioperative analgesia in children such as inguinal hernia and hydrocele repair, orcheopexy, circumcision, hypospadias, anal procedures, and lower limb orthopedic interventions have become standard practice. The ease of placement of the caudal block, its safety and reliability in providing perioperative anesthesia are well known.

As a long-acting local anesthetic, bupivacane is used worldwide in caudal blocks to ensure safe and effective perioperative analgesia in children. However, the analgesic effect of caudal bupivacane persists for a short time.

To address this problem, various drugs such as morphine, midazolam, ketamine, clonidine, fentanyl, neostigmine, buprenorphine and diamorphine have been combined with bupivacane to further extend the analgesic effect of the caudal block. The results of these combinations are variable. In most cases, they prolong the effect of the caudal block, but there is also an unacceptable increase in the number and severity of side effects.

Tramadol is a synthetic centrally acting drug that provides analgesic performance but does not cause serious side effects. Various studies have shown that caudal tramadol is as effective as bupivacane or better at providing perioperative analgesia in children. The combination of tramadol and bupivacane not only extends the time of postoperative analgesia, but also significantly reduces the dose of both drugs, thereby reducing side effects.

The aim of this study is to assess the efficacy and safety of the caudal block using low doses of bupivacaine and tramadol under post-operative anesthesia in children undergoing umbilical cord surgery.

METHOD:

The study was conducted at the Department of Pediatric Surgery and Anesthesia department of Nishter Hospital Multan for one year duration from March 2019 to March 2020. All pediatric patients aged 1 month to 12 years who underwent interstitial surgery with a physical condition in ASA I and II were included. Patients suffering from local infection, neurological disorder, anticoagulant therapy with hemorrhagic diathesis, history of allergic reactions to local anesthetics, cross / vertebral abnormalities and insufficient / unsuccessful block were excluded.

The written informed consent from parents was taken. All patients received general anesthesia after preparation of standard means and anesthesia. The caudal block is used for all patients. After all aseptic measurements, the caudal block was taken in the left position, as described earlier. In all cases, a combination of 1 mg tramadol and 0.25% bupivacaine at a dose of 0.5 ml / kg was applied to the caudal block.

All patients were completely awake before moving from convalescence to the ward. Paracetamol at a dose of 15-20 mg / kg or diclofenac sodium suppository at a dose of 1 mg / kg is prescribed depending on the age and weight of the child and the presence of the drug as a painkiller after 12 hours of operation.

Table I. Observer pain scale

Item	Score
No Pain	
Laughing Euphoric	1
Happy Contented	2
Calm or Asleep	3
Mild-Moderate Pain	
Crying, Grimacing Restless can	
distract with toys or parental presence	4
Severe Pain	
Crying Screaming Inconsolable	5

Postoperative pain was assessed using the Observer Pain Scale (Table I) and pain self-description when the child was over 2 years old. Information was also recorded about parents' insights and the comfort and sleep of their children. When the pain score was 4, additional / rescue analgesia was used. The need to observe / record rescue analgesia accompanies postoperative complications such as sedation, nausea, vomiting, respiratory depression, urinary

retention, pruritus, and motor weakness.

RESULTS

A total of 48 children were operated on in various lower abdominal states, receiving a caudal block, using a combination of low doses of bupivacaine and tramadol. The age ranged from 1 month to 12 years. The maximum number of patients ranged from 1 month to 4 years (Table II).

Table II. Age Distribution

Age Range	No. of Cases
> 1 Month - 1 Year	16
> 1 Year - 4 Year	17
> 4 Year - 8 Year	7
> 8 Year - 12 Year	8
Total	48

45 of them are men and 3 women. 35 of 48 children were operated for inguinal scrotal diseases, and 7 of them for urogenital diseases. The various surgical procedures performed are shown in Table III. It has been found that the flow block, which uses a combination of tramadol and bupivacaine at low doses, provides reliable effective postoperative anesthesia in all children and none of the patients requires additional analgesia for up to 12 hours after receiving the intended dose of paracetamol or sodium suppositories diclofenac depending on the

age and weight of the child and the availability of the drug. Even a good analgesic effect was observed in patients undergoing appendicitis.

Parents of the children were very pleased because of the excellent analgesic effect of the caudal block after surgery. Postoperative nausea and vomiting were observed in four patients. Under no circumstances sedation, nausea, vomiting, respiratory depression, urinary retention, itching, motor weakness, etc.

Table III. Surgical procedures performed

Procedure	No. of Cases
Inguinal Herniotomy	26
Urethroplasty	3
Appendectomy	4
Orchidopexy	4
Ligation & Division of PPV	4
Circumcision	4
Miscellaneous (Anorectal Conditions, Torsion Testis, TEV)	3

DISCUSSION:

The caudal block is one of the most commonly used regional blocks to provide children with intraoperative and postoperative pain relief during infra-umbilical surgery. The reasons for the widespread use of this blockade are many and include infra-umbilical surgical conditions that account for the majority of children's daily surgical procedures, such as inguinal hernia, hypospadias and hydrocephalus repair, orcheopexy,

circumcision, abnormal surgery, orthopedic intervention in the lower limbs.

It can be easily learned and mastered. Schuepfer reported that only 32 blockades are needed by an internal anesthesiologist to reach the skill level of experienced colleagues. 5 The frequency of possible complications associated with the procedure, such as total anesthesia of the spine, involuntary tire puncture or unintentional intravascular injection,

rectal perforation, sepsis, hematoma formation, irregular obstruction is very low and can be prevented if the appropriate technique is used.

Although it is a universal block, the main limitation of a single-shot caudal block is the relatively short time of postoperative analgesia, even with long-acting local anesthesia. As reported in various studies, the duration of the analgesic effect of caudal blocking of a single dose with 0.25% bupivacaine is variable and varies significantly from 2 to 6 hours to 24 hours. In most studies, the duration of epidural bupivacaine anesthesia is about 7-10 hours.

The most commonly used method to further extend caudal block action is to add various ancillary agents to the local anesthetic solution. The results of these combinations are variable. Although in some cases they prolong the action of the caudal block, the increase in the number and severity of side effects is also unacceptable.

In this study, the authors applied bupivacaine and tramadol to the caudal block and found that the caudal block significantly prolonged the postoperative analgesic effect. Similar results have been reported in various studies. Batra reported that bupivacaine provides an analgesic effect in the immediate postoperative period, tramadol provides an analgesic effect in the late postoperative period, and therefore increases the overall duration of the analgesic effect (additive effect) when a combination of these two drugs is used.

Different doses of bupivacaine and tramadol were used in these studies to block the caudal. Khalid used 0.25% bupivacaine 0.8 ml / kg in combination with tramadol 2 mg / kg and reported postoperative analgesia for a maximum of 16 +/- 4 hours, but vomiting was more common.

Senel et al. Postoperative analgesia was observed for 13 +/- 2.2 hours in combination with 0.25% bupivacaine 1 ml / kg tramadol 1.5 mg / kg in the case of caudal blockade. Parkash used tramadol at various doses (1, 1.5 and 2 mg / kg) in combination with 0.25% bupivacaine 0.7 ml / kg and found a long-term analgesic effect with tramadol 2 mg / kg at 10% incidence of vomiting.

In contrast to all these studies, even the combination of low doses (0.25% Bupivacaine and Tramadol 1 mg / kg at 0.5 ml / kg) proved to be effective in prolonging postoperative analgesia by dose combinations. In addition, due to the combination of low doses, no adverse effects such as respiratory depression, sedation, urinary retention, itching, motor weakness or constipation were observed in any case.

The frequency of vomiting in this study is minimal

compared to the relatively higher frequency reported by others. Khan and Memon reported similar results when using a low dose of bupivacaine and tramadol to block.

Unlike all these studies, Prosser reported that the addition of tramadol 2 mg / kg caudal bupivacaine did not significantly increase the postoperative analgesic effect of caudal bupivacaine. Unlike other studies, no failed caudal block problems were found. This is because in all patients in the study group, the flow inhibitor is administered by an experienced, experienced anesthesiologist-consultant.

CONCLUSION:

The combination of a low dose of bupivacaine with tramadol in a caudal block provides significantly extended post-operative anesthesia in all children with minimal side effects. It is a simple, safe and effective procedure.

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