STUDY THE SAFETY OF CAUDAL BLOCK COMBINED WITH GENERAL ANAESTHESIA IN PEDIATRIC SURGERY.

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Received on: 16/09/18;   Revised on: 22/10/18;   Accepted on: 01/11/18

ABSTRACT

Pediatric anesthesia is critical and sensitive subject. Caudal Epidural Block with General Anesthesia is safe for anesthesia and good analgesia for below lower abdominal surgeries. For this study 60 ASA1 patients were selected from Pediatric Surgery ward. The age and weight of patients were 6 months to 3 years and 7 to 15 Kg respectively. The Consent, Fitness and Investigations of all patients were done as per standard norms. Premedication (Atropine 11mcg/kg + Odensetrone 0.1mh/kg + Midazolam 0.05mg/kg) was given to every patient. Ketamine (2mg/kg) used for induction agent. For Caudal Epidural Block, Lignocaine with Adrenaline (7mg/kg) and Bupivacaine (2mg/kg) were used. The distilled water added into local anesthetic drug for preparation correct volume of local anesthetic drug. Action of Caudal Block was satisfactory. All patients were watched for complications during operative and post-operative 24 hours with standard monitoring protocols. No any event occurred like hypoxia, hypothermia, convulsions, hypotension and bradycardia during operative and post-operative period. All patients recovered smoothly from General Anesthesia and Caudal Epidural Block. Combined General Anesthesia with Caudal Block was found safe and provides good analgesia below lower abdomen and inguinal region surgeries. It lowers dose of anesthetic agent during operative period and minimal side effects and complications.

Keywords: Anesthesia, Pediatric Surgery, General Anesthesia, Caudal Epidural Block, Combined Anesthesia.

1. INTRODUCTION

Anesthesia is critical and emergency branch of Medical science. The safety and recovery of anesthesia without complication is very important. Any complication during anesthesia and post of anesthesia may fatal or lifelong impact on patient life. Providing safe anesthesia and analgesia is main task in pediatric anesthesia. General Anesthesia with Caudal Epidural Block provides safe anesthesia and analgesia in lower abdominal and inguinoscrotal surgery. General Anesthesia combined with Caudal Epidural Block gave better result for children; parent and surgeon.

During every surgical procedure, pain is big issue of anxiety for parent and child. Safe anesthesia and good analgesia become more important task than itself because of unfamiliar and anxious parents and child. That is why proper analgesia and safe anesthesia will very comfortable condition and less emotionally disturbing experience for patient family. Also, it reduces unnecessary use of drug and stay of hospital.1 The sensation of pain and discomfort during surgeries and after surgeries usually differ from patient to patient. This subjective measurement of the condition sometimes causes unnecessary usage of analgesic and anesthetic drug. Caudal Block with General Anesthesia is safe and good analgesia during operation and postoperative. Also, early recovery of child from general anesthesia.

2. METHODS

2.1. Objectives

♦ To study safety of Caudal Block combined with G. A.
♦ To study Caudal Block and General Anesthesia in Pediatric anesthesia.

2.2. Study design

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The data were obtained from pediatric department of collage hospital and RGAJY attached private hospital. Total 60 patients were selected of lower abdomen and inguinoscrotal surgeries from February 2017 to August 2017. Patients’ personal details like age, weight, height and medical history was recorded. All patients’ investigation, diagnosis, surgical procedure consent and plan of anesthesia was confirmed. All patients were keenly observed during operative and postoperative 6 hours for complications and pain management after induction of anesthesia.

2.3. Method of Anesthesia

2.3.1. Indications for Caudal Anesthesia

The indications for single shot CA abdominal, Urological or Orthopedic surgical procedures located in the sub-umbilical abdominal, pelvic and genital areas, or the lower limbs, where postoperative pain does not require prolonged strong analgesia. E.g. Surgery including inguinal or umbilical herniorrhaphy, orchiopexy, hypospadias and club foot surgery etc.

2.3.2. Technique

A. Preparation

- Consent.
- Preoperative Clinical examination and assessment.
- Preanesthetic medication. * Inj. Atropine 0.01-0.02mg/kg.
  * Inj. Ondensetron 0.1mg/kg.
  * Inj. Midazolam 0.05-0.1/kg.
- Induction - Inj. Ketamine 1-2mg/kg IV.
- Local anesthetic agent (LA) * Inj. Lignocaine with adrenaline (1:20000) 7mg/kg.
  * Inj. Bupivacaine 2mg/kg.
- Position - Lateral with hip flexed up to 90 degree.
- Skin disinfection * Betadine.
  * Sprite.

B. Procedure of caudal block

After induction of anesthesia and proper maintenance of airway of child, Oxygen was given with nasal prone. Lateral position was given with knee flexed close to abdomen. Disinfection of puncture site and area of surrounding was done. No. 24G was used for caudal puncture. After identifying bony landmark of sacral triangle and sacral cornuae by fin-ger tips from side to side. The puncture was performed between two sacral cornuae. The needle was oriented 60 degree in relation to back plane. Beval of needle was oriented upper side (cephalic). The sacrococcygeal ligament gives loss of resistance (pop) when needle crosses it. After it direction of needle was changed to 30 degree in relation to back plain and needle was advanced few millimeters into sacral canal. (If needle contact with bony structure needle must be moved back into correct space.)

After puncture verifying absence of reflux of blood or CSF, distil water was pushed to verify smooth flow without resistance into caudal epidural space. After that syringe of local anesthetic (LA) was attached to caudal puncture needle to push drug slowly. Total volume of drug was approximately 1ml/kg for satisfactory effect. Thus, drug diluted with distil water for desired volume to be achieved within the maximum recommended dose.

2.5. Complications

Complications of caudal epidural block are very rare. Few are as follows.

2.5.1. Dural Tap

If needle advanced in the subarachnoid space and injection of local anesthetic agent cause extensive spinal anesthesia it may fatal. Under general anesthesia this complication should be suspected if non-reactive papillary dilation (mydriasis) is observed.

2.5.2. Vascular or bone puncture

It can lead to intravascular injection and local anesthetic (LA) goes to systemic circulation causes LA systemic toxicity. Preventative measures are following -

- Use first distil water to push in caudal space to identifying resistance. If no resistance felt local anesthetic (LA) push in caudal space.
- Use of test dose of LA.
- If subcutaneous swelling at puncture site or resistance felt during the injection stop immediately.

2.5.3. Overdose of local anesthetic (LA)

Related cardiovascular and neurological complication.

2.5.5. Urinary retention
2.5.6. Sacral osteomyelitis (very rare)

2.6. Monitoring
- Heart rate.
- Oxygen saturation.
- Blood pressure (SOS)
- ECG

2.7. Postoperative analgesia
- Caudal block itself provides good postoperative analgesia for 2-3 hours.
- Diclofenac suppository.

3. RESULTS

A total number of 60 patient of pediatric surgeries were performed during 6-month study period. The patients were aged and weight from 6 months to 3 years. General Anesthesia with Caudal Epidural Block was the only form of anesthesia administered mainly for the inguinoscrotal and circumcision procedure. Combined anesthesia and Caudal Block during procedure leads usage of low dose of intra venous Ketamine. Also repeat dose of intra venous ketamine not required for any procedure. This was achieved by good analgesia of Caudal Epidural Block. Five complications were taken as criteria which already observed during and post anesthesia period. Observed complications and number of patients found listed below in Table No.1.

During operative and postoperative 60 patients’ comfort was very positively remarkable. This leads high satisfaction and relaxation to parents. Calm and painless patients during operative and postoperative and happy parents was observed during study. It led a good comfortable surrounding and working situation for anesthetic, surgeon and staff. This was achieved by safe and good analgesia of Caudal Epidural Block and General Anesthesia.

4. DISCUSSION

Safe and good analgesia is very important part of pediatric surgical procedure because of very sensitive children and anxious parents. It plays major role in the healing process. That is why many different plans of anesthesia have been performed and many research articles have been published regarding safety and good analgesia. Caudal Block is type of regional anesthesia have thought proper for pediatric anesthesia. Lowering dose of general anesthetic agent during intra operative and providing adequate postoperative analgesia are well known two major benefits of Caudal Block. Large dose of inhalation agent and intra venous general anesthetic agent may be harmful and complicated, also analgesic drug usage for operative pain relief is inconvenient in children postoperatively. Caudal block is effective and safe to resolve these problems.

Local anesthetic agent Lignocaine is well known for its rapid action and Bupivacaine is well known for its long duration of action and prominent sensory block. Lignocaine and Bupivacaine combination is better for Caudal Block. We observed an early anesthesia recovery of patient from General Anesthesia and better postoperative pain control with the usage of Caudal Block. There is a trend toward usage of non-opioids, non-steroidal agents as an analgesic agent because of relatively safe and fewer side effects. We used the Diclofenac suppository post operatively so there was no need of any parenteral agent for pain control within 6 hours. The symptoms like nausea and vomiting were not observed during operative and postoperative period. This study proved that combined Caudal Block with General Anesthesia is safe for pediatric lower abdominal and mostly inguinoscrotal surgery without prominent complications. It significantly reduced anxiety and anesthetic and analgesic drugs. Also, it reduced unnecessary hospital stay.

4. CONCLUSION

In pediatric surgery providing safe anesthesia and management of pain is important task for calm and painless patient. Combine Caudal Block with General Anesthesia is safe and better management of pain.

5. REFERENCES

6. TABLES

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Complication of anesthesia</th>
<th>No. of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hypoxia or difficulty in breathing</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Vomiting and nausea</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Convulsion</td>
<td>0</td>
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<tr>
<td>4</td>
<td>Hypotension</td>
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</tr>
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<td>5</td>
<td>Bradycardia</td>
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Table No. 1. Complications of anesthesia

Cite this article as:

Source of Support: Nil; Conflict of Interest: None declared.