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"Comparision of Caudal Bupivacaine And Rectal Diclofenac Suppositories For Post Operative Analgesia In Pediatric Age Group"

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Abstract: AIM:*To compare the efficacy of caudal Bupivacaine toDiclofenac suppositories forpostoperative analgesia inpaediatricage group.****MATERIALS AND METHODS****:After attaining ethical committee permission 6opaediatric patients with ASA grade I&II of either sex were divided into two groups Group B and Group R.Patients in Group B were given caudal Bupivacaine while patients in Group R were given Diclofenac suppositories after surgery.****RESULTS****: Patients in both groups are observed for duration of postoperative analgesia and the side effects.Results are statistically analysed and tabulated* ***CONCLUSION:****We concluded from our study that Caudal Bupivacaine produces more postoperative analgesia than Diclofenac suppositories.*

Keywords*: Bupivacaine, Diclofenac, postoperative analgesia,caudal block*

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I. Introduction

Pain is a consistent and predominant complaint of almost all the children following surgical interventions. Failure to relieve pain is morally and ethically unacceptable. Adequate pain relief could be considered a basic human right. Patients expect effective postoperative pain relief, and their carers ensure that they are not disappointed.[1]

High-quality pain control after surgery is still a major challenge. Although opioids have been the mainstay of postoperative pain management, they are not free from side effects. A multimodal approach has been suggested to improve postoperative analgesia and to reduce opioid related side effects. Surgical stimulation is associated with central and peripheral sensitization. Anti hyperalgesic drugs improve postoperative pain by preventing the development of central sensitization.[2]

Multimodal Analgesia

For many years, the primary modality used for postoperative pain has been opioid-based analgesia. However, the side effects of opioid-based analgesics which include nausea, vomiting, sedation, pruritus, constipation, urinary retention, respiratory depression often impair patient progress and recovery after surgery[3]. The increased morbidity associated with opioid only strategies, and the evidence that opioid medications tend not to be effective at relieving movement evoked pain, have created a movement in anaesthesiology to adopt multimodal analgesic strategies to manage preoperative, intra-operative, and postoperative pain. These multimodal strategies are often implemented throughout the perioperative (i.e. the three time periods of the hospital stay: preoperative, intra-operative, and postoperative) stay.

DEFINITION

With the advances in the understanding of the patho physiology of pain, multimodal analgesia has become the standard of practice to treat moderate to severe postsurgical pain following orthopaedic surgery[4.]

This practice involves the use of different classes of analgesic agents with different routes of administration to:

[1] provide superior pain relief at rest and with movement,

[2] reduce opioid consumption

[3] reduce analgesic-relate adverse effects[5,6.]

Many clinical trials have demonstrated the effectiveness of multimodal analgesia, however, positive results have not been routinely translated into clinical practice[7]

. Multimodal pain regimens of Non-steroidal anti-inflammatories (eg.celecoxib,diclofenac, acetaminophen) and Regional anaesthesia were effective in controlling perioperative pain and decreasing perioperative opioid use[9].

More data are needed to determine whether similar multimodal pain regimens with regional anaesthesia (an anaesthetic that affects a large part of the body (i.e. a limb), which is often achieved with central-neuraxial anaesthesia (i.e. spinal/epidural anaesthesia) and/or peripheral nerve blocks)reduce the time course of recovery, and/or maximize functional recovery of patients following major surgery.

The managementof postoperative pain has received muchinterestinrecentyears.The degreeofpostoperative pain,asultimatelyperceivedbythepatient, is multi factorial anddependson variables such as type and duration ofthe operation, type ofanesthesiaand analgesiaused, and the patient'smentaland emotional state.[9]If sufficientanalgesiais provided, not onlywill the patient'scomfortbe increasedbut the duration of hospital staywillbeshortened, reducingbothtreatment costs andtheriskofhospital-acquiredinfections

Caudal anesthesia is recommended for intra operative and post operativeanalgesia for most surgical procedures of the lower part of the body (mainly below the umbilicus), including inguinal hernia repair, urinary and digestive tract surgery, and orthopedic procedures on the pelvic girdle and lower extremities.[10]Rectal suppositories can also be used as a method of post operative analgesia because of its easy route of administration.

Worldwide, the caudal block is likely the most commonly used technique of epidural blockade in children. Nevertheless, it is less used in some countries in favor of peripheral blocks. The technique is described as simple and easy to perform for most, with few complications. Caudal anesthesia considerably decreases stress hormone response to surgery[11,12]. The rate of complete or partial failure of this technique is 3% to 11%[13] especially in children older than 7 years of age.

Propionic acid derivatives, such as diclofenac, possess prominent analgesic, antipyretic, and anti inflammatory effects, reflecting the inhibition of prostaglandin synthesis. Rectal administration is associated with delayed and erratic uptake; single doses of 35 to 45 mg/kg generally produce therapeutic plasma concentrations[14.] Subsequent rectal doses, however, should not exceed 20 mg/kg and the interval between doses should be extended to at least 6 to 8 hours. The rectal route of administration can be particularly effective for children with no intravenous access, such as pressure-equalizing ear tube placement.

The aim of present study was to evaluate postoperative analgesic benefit in patients given Caudal block with Bupivacaine or rectal diclofenac suppositories and to compare their postoperative efficacy with respect to increase in duration of analgesia, reduction in total post-operative requirements of analgesics and study side effects and complications, if any attributable to these drugs.

With this background in mind, we designed this study to test the hypothesis that the intra operative caudal block after infra umbilical surgeries will reduce the consumption of analgesics after the procedure and to compare its efficacy and side effects with that of rectal diclofenac suppositories.This study was designed to compare their efficacy with respect to increase in duration of analgesia, reduction in total post -operative requirements of analgesics and side effects.

AIMS & OBJECTIVES

Comparision Of Caudal Bupivacaine & Rectal Diclofenac Suppositories For Post Operative Analgesia In Pediatric Age Group

Objectives

i) To identify and study the role of caudal bupivacaine as analgesic in post operative period in paediatric age group.
ii) To identify and study the role of rectal diclofenac suppositories as analgesic in post operative period in paediatric age group.
iii) Compare the efficacy of caudal bupivacaine & rectal diclofenac suppositories in paediatric analgesia in post operative period.

II. Methodology

In a prospective randomized study, sixty patients scheduled for infraumbilical surgeries in pediatric age group ranging from 1-14 yrs years of age in physical status, ASA grade I and II were selected for the study. Clearance from institutional Ethics committee was obtained. They were randomly allocated to one of the two group of thirty each by allocating the patients alternatively to either group. Patients were subjected to pre-anaesthetic assessment and informed consent was obtained from all the patients.

Patients in Group B (n=30) were given caudal block with 0.25% Bupivacaine at 1ml/kg bodyweight, whereas in Group R (n=30) were administered with Rectal diclofenac suppositories(35mg/kg). Both Caudal block and Rectal diclofenac suppositories were administered at the end of the surgery for post operative analgesia.

Routine monitoring, in the form of NIBP, pulse oximetry and ECG was instituted intra operatively during the procedure and post operatively. All patients were premedicated with inj.Glyco.0.01mg/kg, inj.midazolam 0.02mg/kg, and anti emitics. Caudal block was given under strict aseptic precautions with inj.Bupivacaine. Rectal diclofenac suppositories 25-30mg/kg were administered. Fluid administration was continued intraoperatively and post operatively , hypotension if any was treated with fluid replacement.

Pain was assessed postoperatively by visual analogue scale immediate postoperatively and every 30min thereafter until 8 hours, which was explained to the patient and his or her guardian during preoperative visit.

Figure-10 Visual Analogue Scale

Inclusion Criteria

- Patients of American Society of Anesthesiologists (ASA) grade I or II.
- Pediatric age group up to 12 years, scheduled for elective infra umbilical surgeries under General Anesthesia or Total Intravenous Anesthesia were included in the study, after obtaining informed consent.

Exclusion criteria

- ASA grade III and IV patients.
- Emergency surgeries
- Patients with any ano rectal anomalies & spine deformities.
- Prolonged bleeding time/clotting time.
- History suggestive of kidney or liver disease.
- History suggestive of allergy to bupivacaine & diclofenac.

Randomization was carried out by chit in box method. Patients were divided into two groups (group B, R). In each group, there were 30 patients. On day of Surgery , vital parameters including pulse rate, blood pressure [BP], and electrocardiography [ECG] of all the patients were recorded in pre anesthetic room.

On entering the operation theatre IV line was secured using 20 or 22 gauge cannula and vitals (pulse, BP, respiratory rate, SpO_2) were recorded. After the completion of the surgery in group B patients under strict aseptic precautions patient was kept in lateral position and caudal block was performed. The level of sensory block was assessed using a 26 gauge needle and recorded as loss of sensation to pin prick, checking in a caudal to cephalic direction. In group R patients rectal diclofenac suppositories were administered(25-30mg/kg).Routine monitoring of pulse, BP, SpO_2, ECG was instituted intra-operatively. Fluid administration was continued intra-operatively and a decrease in mean arterial pressure greater than 15% below the pre-anesthetic baseline value was treated with incremental doses of injection Mephenteremine 6 mg IV. A decrease in heart rate below 50 beats/min was treated with incremental doses of atropine 0.3 mg IV.

In post-operative period pain assessment was carried out by VAS. Routine monitoring of ECG,NIBP,Heartrate,Saturation. was monitored next 24 hours. The time required for first analgesic was recorded based on the findings on VAS scoring system. Rescue analgesia was administered to the patient when the VAS score is 10 using multi modal analgesia.

MONITORING OF OTHER EFFECTS

Intra – operative patients were monitored for hemodynamic variables such asPulse rate,Bloodpressure,Respiratory rate ,Assessment of blood loss was *done and fluid was administered as per the loss.*

Statistical analysis

Statistical analysis was performed with the SPSS, version 15.0 for Windows Statistical Software Package (SPSS Inc., Chicago, IL, USA). Categorical data, i.e., ASA grade, type of surgery and the incidence of adverse events (hypotension, bradycardia, respiratory depression, nausea and vomiting) were presented as numbers and proportion of these data were compared in two groups and the difference in proportion was inferred by Chi-square test. Demographic data (age, weight), duration of surgery, VAS score, total duration of analgesia and requirement of rescue analgesia were expressed as mean ± standard deviation and these data were compared in all three groups and difference in means were inferred by analysis of variance (ANOVA) — test of

significance. For significance *P* value ≤ 0.05 was considered as significant for both types of data. Descriptive statistics, Mann-Whitney U test , Fisher exact test, paired t-test were applied.

III. Results

Sixty patients, thirty in each group, were included in the study and analyzed. The groups were comparable with respect to demographic characteristics like age, weight, physical status and duration of surgery.

TABLE 1 Distribution As Per Asa Grading Of Patients In Both The Groups.

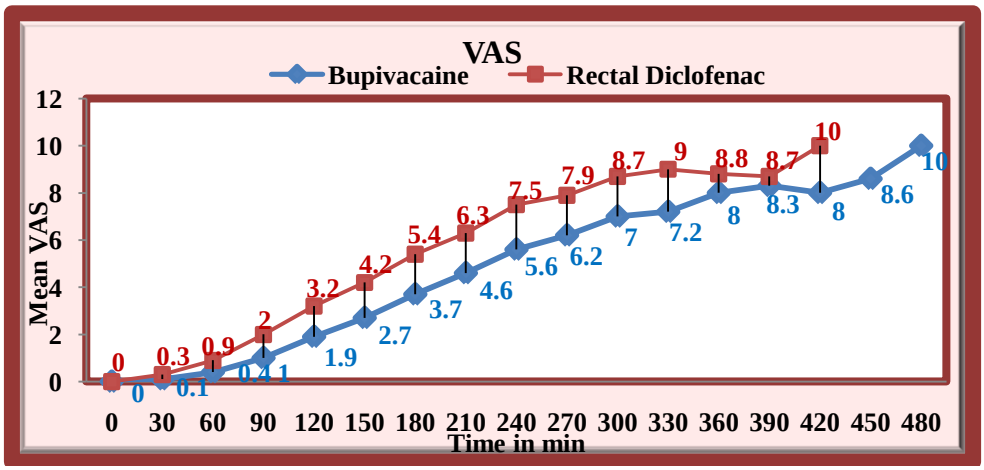
Variable	Group	N	Mean	SD	P-value
ASA	Caudal Bupivacaine	30	1.2	0.4	0.36
	Rectal Diclofenac	30	1.3	0.4	

Table 2. Comparision Of Age In Both Groups

Variable	Group	N	Mean	SD	P-value
Age	Caudal Bupivacaine	30	5.8	3.8	0.21
	Rectal Diclofenac	30	7.1	4.3	

Table 3 : Comparision Of Vas Score In Both Groups

COMPARISION OF VAS SORE BETWEEN BOTH THE GROUPS**VAS at**	**Group**						**P-value**
	Caudal Bupivacaine			**Rectal Diclofenac**			
	N	**Mean**	**SD**	**N**	**Mean**	**SD**	
0 min	30	0.0	0.0	30	0.0	0.0	-
30 min	30	0.1	0.5	30	0.3	0.8	.235
1 Hr	30	0.4	1.0	30	0.9	1.0	.073
1 Hr 30 min	30	1.0	1.4	30	2.0	1.1	.002
2 Hrs	30	1.9	1.4	30	3.2	1.3	.000
2 Hrs 30 min	30	2.7	1.4	30	4.2	1.4	.000
3 Hrs	30	3.7	1.6	30	5.4	1.5	.000
3 Hrs 30 min	30	4.6	1.6	30	6.3	1.7	.000
4 Hrs	30	5.6	1.7	29	7.5	1.4	.000
4 Hrs 30 min	29	6.2	1.6	25	7.9	1.4	.000
5 Hrs	27	7.0	1.9	20	8.7	1.5	.001
5 Hrs 30 min	23	7.2	1.3	10	9.0	1.1	.001
6 Hrs	22	8.0	1.9	5	8.8	1.1	.366
6 Hrs 30 min	14	8.3	1.5	3	8.7	1.2	.694
7 Hrs	9	8.0	1.4	2	10.0	0.0	.087
7 Hr 30 min	7	8.6	1.5	-	-	-	-
8 Hr	4	10.0	0.0	-	-	-	-



Bargraph-1 VAS score shows more duration of analgesia in group B

Table-4 Comparison Of Pulse Rate In Both The Groups

Pulse Rate	Group						P-value
	Caudal Bupivacaine			Rectal Diclofenac			
	N	Mean	SD	N	Mean	SD	
0 min	30	98.6	14.3	30	93.5	11.3	.13
30 min	30	100.1	15.1	30	93.2	10.7	.05
1 Hr	30	98.8	13.7	30	92.9	9.5	.06
1 Hr 30 min	30	97.7	13.6	30	92.7	9.9	.11
2 Hrs	30	96.1	12.4	30	91.5	10.3	.12
2 Hrs 30 min	30	95.3	11.3	30	90.1	8.5	.05
3 Hrs	30	95.0	9.8	30	90.3	9.4	.06
3 Hrs 30 min	30	94.2	9.1	30	90.1	7.8	.06
4 Hrs	30	94.9	9.1	29	89.2	8.9	.02
4 Hrs 30 min	29	93.9	9.5	25	90.3	9.0	.16
5 Hrs	27	94.0	9.9	20	90.8	8.4	.24
5 Hrs 30 min	23	92.9	11.8	10	91.8	4.6	.78
6 Hrs	22	92.6	9.5	5	91.8	4.1	.86
6 Hrs 30 min	14	91.1	9.9	3	89.0	2.0	.72
7 Hrs	9	95.3	9.9	2	90.5	3.5	.53
7 Hr 30 min	7	91.0	10.9	-	-	-	-
8 Hrs	4	94.0	11.2	-	-	-	-

Table-5 Comparison Of Saturation In Both The Groups

SPO2	Group						P-value
	Caudal Bupivacaine			Rectal Diclofenac			
	N	Mean	SD	N	Mean	SD	
0 min	30	99.0	2.6	30	99.6	0.6	.26
30 min	30	98.7	1.2	30	98.2	1.3	.16
1 Hr	30	98.8	1.0	30	98.8	1.3	.91
1 Hr 30 min	30	98.5	1.2	30	98.4	1.3	.68
2 Hrs	30	97.2	1.8	30	97.6	1.5	.31
2 Hrs 30 min	30	97.8	1.7	30	97.2	2.0	.24
3 Hrs	30	97.5	1.8	30	96.7	2.5	.13
3 Hrs 30 min	30	98.0	2.3	30	97.3	2.0	.17
4 Hrs	30	97.0	2.6	29	97.9	1.9	.14
4 Hrs 30 min	29	98.4	1.4	25	98.1	1.7	.44
5 Hrs	27	98.2	2.2	20	98.7	1.1	.38
5 Hrs 30 min	23	98.2	1.9	10	98.0	1.8	.81
6 Hrs	22	98.1	1.6	5	97.4	2.7	.43
6 Hrs 30 min	14	98.2	2.6	3	98.7	1.5	.78
7 Hrs	9	98.0	2.4	2	97.5	0.7	.79
7 Hr 30 min	7	97.7	2.3	-	-	-	-
8 Hrs	4	98.3	2.9	-	-	-	-

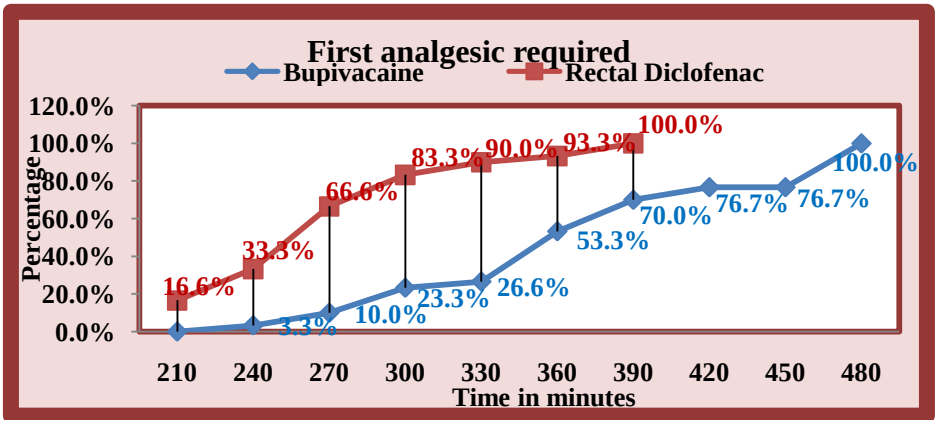
Table-6: Comparison Of Hypotension In Both The Groups

Hypotension	Category	Group			
		Caudal Bupivacaine		Rectal Diclofenac	
		Count	%	Count	%
0 min	No	30	100.0%	30	100.0%
30 min	Yes	3	10.0%	1	3.3%
	No	27	90.0%	29	96.7%
1 Hr	Yes	1	3.3%	0	0.0%
	No	29	96.7%	30	100.0%
1 Hr 30 min	Yes	1	3.3%	1	3.3%
	No	29	96.7%	29	96.7%
2 Hrs	Yes	0	0.0%	1	3.3%
	No	30	100.0%	29	96.7%
2 Hrs 30 min	No	30	100.0%	30	100.0%
3 Hrs	No	30	100.0%	30	100.0%
3 Hrs 30 min	No	30	100.0%	30	100.0%
4 Hrs	No	30	100.0%	30	100.0%
4 Hrs 30 min	No	30	100.0%	30	100.0%
5 Hrs	No	30	100.0%	30	100.0%
5 Hrs 30 min	No	30	100.0%	30	100.0%
6 Hrs	No	30	100.0%	30	100.0%

6 Hrs 30 min	No	30	100.0%	30	100.0%
7 Hrs	No	30	100.0%	30	100.0%
7 Hr 30 min	No	30	100.0%	30	100.0%
8 Hrs	No	30	100.0%	30	100.0%

Table7 : Comparison Of First Analgesic Required In Both The Groups

First analgesic required	Group			
	Caudal Bupivacaine		Rectal Diclofenac	
	Count	%	Count	%
3 hours 30 min	0	0.0%	1	3.3%
4 hours	1	3.3%	4	13.3%
4 hours 30 min	2	6.7%	5	16.7%
5 hours	4	13.3%	10	33.3%
5 hours 30 min	1	3.3%	5	16.7%
6 hours	8	26.7%	2	6.7%
6 hours 30 min	5	16.7%	1	3.3%
7 hours	2	6.7%	2	6.7%
7 hours 30 min	3	10.0%	0	0.0%
8 hours	4	13.3%	0	0.0%
Total	30	100.0%	30	100.0%



Bargraph-2 Analgesic was required earlier in group R

POST OPERATIVE ASSESSMENT

Post – operatively Pulse rate, blood pressure, respiratory rate, consciousness andresponse to Verbal commands were noted. Patient were evaluated post operatively every 15min by VAS till the patient felt pain.The intensity of pain was assessed using visual analogue scale (VAS) Score.This scale consists of a 0 to 10 score on which the patients represented thedegree of pain she was experiencing by placing a point somewhere between " no pain ("0") and the worst pain ever experienced ('10").

score	Criteria
Score 0	no pain
Score 1, 2, 3	Mild pain
Score 4, 5, 6	Moderate pain
Score 7, 8, 9	Severe pain
Score 10	worst imaginable pain

Table-8 Visual Analogue Scoring

The side effects and complications if any like nausea, vomiting, confusion, Dizziness, and blurred vision were monitored for 6hrs postoperatively in all patients.

STUDY DESIGN :

A Comparative Study consisting of 60 subjects was randomized into two groupswith 30 in Group R (Rectal Diclofenac) and 30 in Group B (Caudal Bupivacaine) and undertaken to investigate the post operative pain. All the parameters and variables studies were subjected to statistical analysis. Demographic data and for comparison of groups, Mann- Whitney u-test and student 't' test analysis were performed.

IV. Discussion

Pediatric age group patients receive analgesia adequately in the intra operative period in most centres.post operatively the adequacy of analgesia was less monitored and the quality of analgesia received is less when compared to intra operative period. This study was designed to monitor the effect and quality of post operative analgesia using caudal block and rectal suppositories and their comparison. Previous studies compared the efficacy of the regional block(caudal blockade) in children with different drugs and additives.

Senel et al in 2001 studied the efficacy of caudal bupivacaine alone and caudal bupivacaine with tramadol in children undergoing herniorapy and proved that addition of tramadol to bupivacaine resulted in superior analgesia with longer period without demand for additional analgesics.

Rishid et al in 2000 evaluated the efficacy of rectal diclofenac for analgesia aftewr the surgery and concluded that the pain in the study group was less when compared to control group

None of the present studies compared the efficacy of caudal block and rectal diclofenac suppositories for post operative pain relief in children. Although the mechanism of action and route of administration is different, both these drugs provide adequate analgesia post operatively.

The Non steroidalanti inflammatory drug, Diclofenac was found to provide adequate analgesia in the present study. Significantly, pain scores after 1-2 hours after administration of active drug were different from those who were not administered with diclofenac suppository. There are several explanations for this observation

1. The relative change in Visual Analogue Scoring after diclofenac intake was similar throughout the study , indicating significant pain relief. Moreover, lower the consumption of rescue analgesics after the use of diclofenac and grater the average of visual analogue scoring, may be explained by subjective adaptation to lower degree of pain.
2. The tendency towards increase in pain seen in diclofenac group may follow the natural course and development of pain in the post operative period with more pronounced pain. However there was no similar trend in the other group[15.]

The plasma half life of diclofenac has been estimated to be approximately 90 minutes[16]. Therefore complete washout was allowed before rescue analgesia was administered.

However rectal route of administration is used frequently than caudal block because of its

I. Easy route of administration
II. No technical skill is required
III. Less chance of infection
IV. It is a painless procedure.

7 cases have been excluded from the study of the 37 cases done in this group because of some relative and absolute contraindications present in the patientsBleeding or coagulation disorders, Non Asprin induced Asthma, Known hypersensitivity to Non Steroidalanti inflammatorydrugs,High risk of Gastro intestinal bleeding[17.]

In the other group the caudal block was given using Injection.Bupivacaine. The required volume of analgesic have been evaluated by several authors[18,19]. Few works considered the volume of the anesthetic mixture as a determinant of quality and duration of blockade. Description of neuroaxial blockade by Bromage suggests that the blockade should regress from the site of lowest anesthetic concentration distal from the injection caudally, towards the higher concentration[20]. In this prospective , a high volume anesthetic mixture should be effective in providing long lasting analgesia in surgical procedure whose metameric innervation is very low Results in our study show that the use of high volume and low concentration mixture leads to an adequate analgesia, thus confirming the hypothesis of cranio caudal regression of the blockade[21].

In this study we used inj.Bupivacaine a Amide local anesthetic for administration in caudal block

The duration of action of Bupivacaine 120-480 minutes is greater than other drugs so the duration of analgesia is also prolonged. So Bupivacaine is the choice of drug in the caudal block in this studyCaudal anesthesia is basically a single-shot technique. Occasionally, placement of an epidural catheter for repeat/continuous infusion is contemplated. We did not use any caudal epidural catheters in this study baring in mind the risk of systemic toxicity, infections related to the catheters and the aim of this study was to compare the efficacy of caudal block and Rectal diclofenac suppositories, the results obtained may be altered if repeated doses were administered.

Because of variations in surgical procedure, pain perception, patient variables of anatomy and drug disposition, no fixed regimen can be sufficient for all patients. Starting doses must be adjusted based upon patient responses. Assessments in children can be quite complicated as language and understanding of pain and sensation may not convey the experience as clearly as in adults. Children often express many sensations including the tingling or pins and needles feelings of numb extremities as pain. Indeed, for many preschool age children the pulse oxymeter, ECG pads and any number of non-nociceptive stimuli 'hurt' if asked. Testing cold sensation as in adults with an alcohol pad will often lead to ambiguous responses; an ice cube beginning in certainly numb areas sliding toward unblocked dermatomes may be more obvious.

Smaller patients require a nerve to experience a similar exposure to local anesthetic as adults to produce block. Children have a smaller volume of distribution and lower clearance for drugs. Because their drug doses are greater on a weight basis, smaller children will have lower therapeutic indices. The caudal space will tend to require larger volumes for the same dermatome spread compared to the lumbar or thoracic region. Monitoring is essential for safety . The SpO_2 is sensitive for hypoventilation in children breathing room air.

As we used single shot caudal block in our study, we avoided additives because of the hemodynamic instability produced by usage of caudal additives in other studiesPain assessment in this study was done using Visual Analogue Scale which is a single dimension scale for the assessment of pain. The benefit of the VAS is that it has been validated and shown to be sensitive to changes in a patient's pain experience.

However if any question exists about the cognitive abilities of the patient, one may choose to use the Faces Pain Scale, both of which have been shown to be easy to understand and use in this population.The Faces Pain Scale is a visual scale with six somewhatrealistically drawn faces that range from a content-lookingsmiling face to a distressed-looking face.

Other single dimension scales like Verbal Descriptor Scale and Numeric Rating Scales were also available but the Visual Analogue Scale has its own advantage.

Multi dimension scales like Mc Gill pain questionere , short form Mc Gill pain questionere were available . But these multi dimension scales are not used in children because of length of multiple questions and most of the times patients in pediatric age group cannot understand the questions.

However in this study pain assessment is done using Visual Analogue scale, at times it was assessed using Faces pain scale. According to this study Visual Analogue scale is the best method of assessing the pain in infants and children.[78]

In our study, we observed that the pain scores on visual analogue scale were on the lower side for the patients who received caudal block or rectal diclofenac suppositories for post operative analgesia.

Both the duration of analgesia and effect of pain relief were more in patients who received caudal block with bpivacaine. The Visual Analogue Scale scores were zero upto 2-3 hours in most of the cases.

In some cases nausea and vomiting were reported. However adequate premedication with anti emitics prior to the surgery provided relief from nausea and vomiting. The main limitation of caudal block is acceptance of the procedure by the patient attendants and greater risk of failure as technical skill is required to perform the blockade. After infra umbilical surgeries, children who did not receive the caudal block reported clinically significant pain and about 90% of children needed analgesia and about 70% required higher doses and frequently more than one type of analgesia was required .

To conclude, rectal diclofenac and caudal block , both can be an effective tool in the armamentarium of anesthesiologist in treatment of peri operative as well as post operative pain. It can be used as part of multimodal therapy. Caudal block is more superior in providing pain relief post operatively and for longer duration when compared to rectal diclofenac suppositories.

V. Conclusion

The dose response or the effect of continuation of therapy was not evaluated in the present study. So, conclusion about the optimal dose and duration of treatment could not be made. We therefore, suggest that Caudal block given intra operatively after the surgery is effective in reducing postoperative pain and requirement of rescue analgesia in patients undergoing infra umbilical surgeries in pediatric age group.

To conclude, postoperative analgesia was better with Caudal block using injection.Bupivacaine than Rectal diclofenac suppositories during the early recovery after infra umbilical surgeries in infants and children. Caudal block is an effective tool in the treatment of postoperative pain.

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