

Efficacy Of Bupivacaine Infiltration In Post Operative Pain Relief In Children.

M TAHIR S H DAR T LATIF

Department of Paediatric Surgery, Mayo Hospital Lahore.

Correspondence To: Dr. Muhammad Tahir

A series of 156 cases in being presented in which Bupivacaine was used either as a nerve block or for infiltration of operative field. This article presents an overview of the post-operative pain in children with a special emphasis on regional blockade by Bupivacaine.

Key Words : Post-operative pain relief ,Bupivacaine.

Pain relief is often an ignored aspect of patient care. While many studies have highlighted the plight of post-operative pain in adults, a lot still needs to be done for a child in pain. Many misconceptions regarding usage of analgesics especially narcotic analgesics are shared by the parents and medical personnels. Assessment techniques to quantitate pain in children demand observant staff nurses with doctors having high index of suspicion (to ensure oral intake of analgesics in post operative phase is also demanding on the part of the child in agony). Usage of NSAID is contra indicated below five years of age. Narcotic analgesic use needs to be closely monitored. Our study presents the efficacy of regional infiltration/nerve block analgesia with Bupivacaine. Post operative course was less terrifying both for the child and parents leading to early hospital discharge.

Materials and Methods

The material presented is authors own series of patients in private hospital of Lahore during a period of three years (1995-1997). Complete physical check-up with relevant investigations were performed on outdoor basis. The children were admitted on an average 2-3 hours prior to elective surgery. All the cases were operated by the author and injection

Table 1 Variety Of Cases Operated

S No.	Operative Procedure	No. of cases
1	Hemiotomy	34(21.79%)
2	Orchidopexy	20(12.82%)
3	Cervical lymph node biopsy	40(25.64%)
4	Release of PBC(Hand)	06(3.85%)
5	Excision of Angular Dermoid	07(4.48%)
6	Excision of Thyroglossal Cyst	04(2.56%)
7	Urethroplasties	06(3.85%)
8	Rectal Biopsy for H.D	06(3.85%)
9	Fistulectomies	04(2.56%)
10	Sclerotherapy for rectal prolapse	05(3.21%)
11	Circumcision	24(15.38%)

Bupivacaine (0.25%) was used in a dose of 0.8 ml/kg either to block regional nerves or to infiltrate the operative field. The variety of cases operated are shown in the Table 1. The age distribution of the cases is shown in Table 2.

Table 2: Age Distribution Of The Cases

S. No.	Age	No. of cases
1	1mon - 6mon	40
2	6mon - 1yr	34
3	1yr - 5yr	36
4	5yr - 10yr	28
5	10 - 15yr	18

The male to female ratio was 4.03:1 (1256 : 310)

Response of the patient (acceptance of first oral feed after operation & being pain free) and the parents was the real yard stick to send the patients home.

Results

All the patients except two were discharged the same day within 6 - 9 hours after operation. Only single dose of Pentazocine (0.3mg/kg) along with Injection Marzine (cyclizine 3mg/kg/day) was administered soon after the patient was shifted from the theatre. No other intravenous analgesia was used. Second injection of pentazocine was required in only 10% of cases.

Ibuprofen/ Paracetamol were prescribed at the time of discharge. Two patients who could not be discharged the same day had to be nebulized for they developed post operative wheeze. Out of them one had H/o seasonal wheeze and was using bronchodilator off & on.

The second patient developed wheeze a few minutes after the injection of bupivacaine. He was given solucortef & was later nebulized with ventolin. Both these patients were discharged the next day.

All the patients were advised to seek help if required. None reported within 24 hours follow up. The first post-op follow up was two days after surgery. The next was at the time of removal of stitches. No major complication was observed.

Discussion

Pain is considered to be the most feared consequence of disease process. Consequently pain relief should be the cardinal principle of compassionate medicine. Despite this standard teaching pain management is often a neglected aspect of patients care. Since 1970's many investigators have shown that pain is usually inadequately dealt with, probably due to misconception regarding analgesic usage¹.

Even medical personnel show obsessive concern about addiction², while no attempt is made to differentiate physical dependence from addiction³. This unhealthy state of affairs have been improved for adults since 70's, but children are still treated less vigorously for pain or even not at all⁴. A clear bias still exists against the necessity of treating pain in children. Circumcisions are done routinely without anaesthesia as is the stitching of minor laceration in emergency⁵.

Many studies document that adults receive, on average, two times the number of narcotic dose per hospital day that children did⁶. Mather & Mackie also point out that given a choice, the doctors and staff nurses would prefer non narcotic to narcotic analgesia⁷.

Following myths & misconceptions still prevail to varying degrees as regard the pain control for children.

Children don't experience pain because of incomplete myelination. The exact origin of this myth is not known but Flechsig was the first to point out that complete myelination is necessary for pain perception⁸. The pinprick experiment in new-born by McGram helped to perpetuate this myth⁹.

Children are thought to metabolise analgesics differently because of the immaturity of their enzymes. Children are thought not to have memory of pain.

The assumption that children become addicted to narcotic analgesics during the hospital stay is shared by parents, doctors and nurses.

Because of the lack of universally accepted assessment technique there are few objective studies for children with pain. The type of techniques available are. Self reporting scales (modified from adult visual analogue scale)

Behaviour observation – using single or cluster of behaviour thought to correlate with pain.

Physiological monitoring which measures physiological changes which might suggest stress or discomfort.

Anand et al demonstrated that infants under going surgery with no or minimal analgesia show a significant rise in catecholamines, growth hormone, glucagon, corticosteroids while insulin level is suppressed leading to hyperglycaemia. In addition infants who received potent analgesia had significantly fewer post-operative biochemical changes¹⁰.

This documentation produced a public outcry and

not less than five editorials in medical journals¹¹. The first international symposium on paediatric pain was held in 1968 so as to share relevant data & establish working principles¹².

Though the situation has been gradually improving but still it is far from satisfactory. Many recent studies show that although both the parents and nurses able to recognise post-operative pain reaction in children, attitude towards pain relief were not uniform. Post operative pain relief is given, "as required" which is interpreted to mean "as little as possible but only after a minimum interval". Even the dosage is arbitrary. If the baby's behaviour e.g. crying did not abate after a dose of analgesia, the behaviour was then often considered to have been due to causes other than pain¹³.

The above discussion becomes more relevant in the developing countries where the patients always outnumber the attending medical personnel. This makes the job of the operating surgeon even more difficult because he can never be sure of adequacy of post operative pain relief. Presently a greater emphasis is being made on regional analgesia usually in the form of infiltration with long acting local anaesthetic or epidural block. As the experience with epidural block in children is very limited in our part of the world so the only choice left is injection Bupivacaine used either as a nerve block or as infiltration anaesthetic. Our study used Bupivacaine administered at the time of operation because of its prolonged duration of action and a relative preference for sensory blockage over motor blockade¹⁴.

When performed at the beginning of surgery after induction of anaesthesia, it may lead to reduced anaesthetic requirement & more rapid emergence.

Conclusion

Bupivacaine was found to be quite effective in reducing post operative pain. It helped to reduce the dosage of analgesia after operation. Because of its safety profile no major side effect was observed in our series except one infant who developed bronchospasm. It contributed significantly to early mobilization and discharge from hospital thus reducing over all cost incurred by the patient.

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