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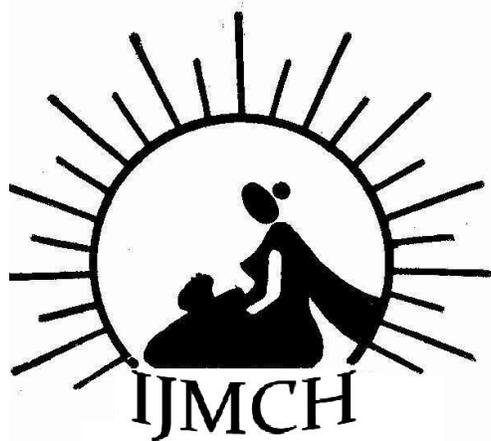
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OBSTETRIC EPIDURAL ANALGESIA IN NULLIPAROUS PARTURIENTS TO REDUCE THE PRIMARY CESAREAN SECTION RATE IN MGIMS, SEWAGRAM, WARDHA, INDIA.

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Abstract:

Research question:

Epidural analgesia is highly effective method of providing pain relief in labour. This method is less commonly used in India than in west. The purpose of this paper is to determine the obstetric epidural analgesia for labour pain relief and to reduce primary cesarean rate in primigravida in view of intolerance to labour pain (labour pain phobia) and leading to increased primary cesarean rate.

Settings, Study Design, Participants, Methodology

Sample size of study was small because of inadequate infrastructure, lack of public awareness and resources. Epidural analgesia rate in our Institute (2.34%) and in India are lower than reported rates (10 – 19.7%), and explanation is likely multifactorial.

Results

Possible reasons, include cultural and racial factors, lack of public awareness and lack of resources and infrastructures about obstetric epidural analgesia. Further studies may elucidate the relative importance of these factors and highlight areas where better public education about epidural analgesia and availability would be of value.

Key Words:

Obstetric epidural analgesia, Labour pains, Primary Cesarean section rate, Nulliparous parturients

Introduction

Epidural analgesia is a highly effective method of providing pain relief in labour (1). Our experience and observations suggest that this method is less commonly used in India than it is in the west. The reasons for this may include racial and cultural differences, a lack of public awareness. However, inadequate facilities or resources in Indian hospitals may also be a contributory factor. The purpose of this paper is to determine the obstetric epidural analgesia for labour pain relief and to reduce the primary cesarean rate in primigravida in view of intolerance to labour pain (labour pain phobia) and leading to increased primary cesarean rate in our country. We have tried to highlight and tackle this problem by small study because of inadequate infrastructure, lack of public awareness and resources.

Methods

We have included 100 nulliparous parturients in this study over 12 months period (November 2010 – October 2011).

Inclusion criteria

Primi gravida with term pregnancy having labour pain phobia, especially in affluent society.
Epidural analgesia and anaesthesia is not contraindicated in that group of parturients.
Nulliparous term pregnancy with labour pain phobia, especially in affluent society.

Exclusion criteria

Multi gravida without previous scar and with previous cesarean section.
Primigravida with Placenta Previa.
Primigravida with preterm labour pains.
Primigravida with Oligohydramnios and intrauterine growth restriction (IUGR).
CPD (Cephalo-pelvic disproportion) having parturients.

Selection of analgesic method

Parturients arriving in the delivery suite are first assessed by the midwives and resident doctors, who introduce and explain the available methods of analgesia (table – 1). All requests for epidural analgesia are then referred to the anaesthetic team on duty who perform a medical assessment and provide further explanation. Many of these parturients have been educated on the different methods during antenatal classes where both written and visual information are available.

There are several ways to administer epidural analgesia (Table – 2).

In our unit, intermittent epidural analgesia is the most commonly used technique (Appendix). Alternative techniques include continuous epidural analgesia of 0.1% to 0.25% bupivacaine administered by the anaesthetist and recently, combined spinal – epidural (CSE) analgesia has also been introduced. The usual CSE regimen uses intrathecal bupivacaine 2.5 mg followed by subsequent epidural infusion using the above regimen. The choice of technique is determined by the attending trainee or senior anaesthetics. Other methods of

obstetric analgesia such as relaxation techniques, breathing exercises, entonox (50% nitrous oxide in oxygen) inhalation, and intramuscular opioid are managed and supervised by the obstetricians and midwives.

Review of anaesthetic records

Data including the total number of deliveries, the proportions of the different methods of delivery and the cases of epidural analgesia from November 2010 to October 2011, were retrieved from the obstetric database maintained by the midwives and resident doctors. The anaesthetic records of all parturients who received epidural analgesia over the same period are reviewed. The incidence of complications and adverse effects including inadvertent dural puncture, systemic toxicity from local anaesthetics, hypotension (systolic blood pressure <90 mm Hg), post dural puncture headache, backache, persistent leg weakness or paraesthesia, pruritus and urinary retention were obtained from the anaesthetic records. In addition, the modes of delivery in the epidural group were recorded and the overall maternal satisfaction was assessed according to a four - point scale: excellent, good, fair and poor. All data collected prospectively and recorded during the course of labour analgesia and routine postpartum follow-up. Each parturient had received epidural analgesia when they had attained the cervical dilation of 4 – 5 cm in active stage of labour.

Results

Review of obstetric data and anaesthetic records:

There were 4260 delivery at the MGIMS, Sewagram, Wardha over the 12 month period. The cesarean section rate (elective and emergency) was 30% and the instrumental delivery rate was 10%. The respective epidural and spinal anaesthesia rates were 13% and 67% for elective and 24% and 45% for emergency cesarean section. General anaesthesia was provided for the remainder.

Epidural analgesia was provided for 100 parturients. This represented 2.34% of all deliveries. Of the parturients who received epidural analgesia, 100% anaesthetic records were available for analysis. In this study, all parturients had received intermittent top-ups epidural analgesia. The cesarean section and instrumental delivery rates were 11% and 10% respectively, in parturient who received epidural analgesia. Table – 3 shows the incidence of adverse effects and complications of epidural analgesia. Maternal satisfaction was rated as excellent or good by 90% of parturients who received epidural analgesia during labour, while 9% rated as fair and 1% as poor.

Discussion

Obstetric epidural analgesia is available in our Institute for study purposes and some other special circumstances. Although the regional anaesthesia rate for cesarean section was 75% at our institution, the epidural analgesia rate during labour was only 2.34% which is not consistent with the median epidural rate of 10% in Hong Kong. In a recent survey of maternity units in the United Kingdom, the epidural rate for labour analgesia was 19.7% (2). There may be several reasons for the lower incidence of epidural analgesia in our Institute. Firstly, the provision of this method of obstetric analgesia is relatively new. Lack of familiarity (patient and staff) with epidural analgesia may also contribute to the low rate. Public ignorance of its availability and misconceptions about the safety and effects of epidural analgesia may also have reduced the popularity of this method. Epidemiological

studies to determine the level of awareness and knowledge of the local population about epidural analgesia may help to clarify possible reasons and highlight areas requiring improved public education.

Pain is a multi dimensional phenomenon involving physiological, psychosocial, cultural and racial factors. Indian parturients may have different expectations of labour and pain compared with westerners, and may be less likely to request epidural analgesia (3). A recent study found that only 4% of Chinese would request the use of local anaesthetic for labour pain, compared with 53% of Anglo-Americans and 35% of Scandinavians (3). Parturients belonging to affluent society in India knew about painless labour by epidural analgesia. That is why these parturients have labour pain phobia and if facilities not providing the epidural analgesia (painless labour) they are directly landing into cesarean section. Asian patients have been shown to have lower post-operative analgesic requirements than do European patients (4). The influence of cultural and racial factors on analgesic requirements may explain some of the differences in obstetric epidural analgesia rates. Differences in expectations may also apply to the midwives and medical staff in India, who could be less inclined to offer more invasive methods of analgesia.

Resources and infrastructure constraints are another major determinant of availability of obstetric epidural analgesia services in our country. "Inadequate manpower and infrastructure" as the reason for not providing obstetric epidural services at MGIMS.

That is why we had provided the services to affluent class parturients to reduce the cesarean section rate in our Institute. Consequently, most public hospitals were unable to offer a regular obstetric epidural services, especially after-hours.

It is difficult to perform an accurate cost analysis of this method of analgesia, while many direct and indirect costs remain unknown. Even, the cost benefit of epidural analgesia has not been fully established (5, 6). The direct costs may differ among institutions, depending on the services provided and equipment used. The indirect cost of treating complications and sequel of epidural analgesia is unclear, especially when the effects of epidural service on obstetric outcome and maternal morbidity remain controversial. Salary costs resulting from changes in staff workload due to epidural analgesia are difficult to estimate because the workload is not constant. Finally, it is difficult to assign a cost benefit to cases where epidural analgesia does improve maternal or foetal outcome, and impossible to quantify patient satisfaction in terms of a monetary equivalent. In our Institute, cost benefit of obstetric epidural analgesia was more or less similar to cesarean section.

In our review of anaesthetic records, there were no cases of permanent disability. The incidence of most adverse effects and complications such as maternal hypotension, post dural puncture headache, and inadvertent venous puncture in our parturients was similar to previous reports(7-11). Our accidental dural puncture rate was 1% that was similar to average reported incidence (1%)(12-14).

The incidence of backache on the second postpartum day in our series was 8%. Several retrospective surveys have suggested an association between epidural analgesia and backache (15-17). The incidence of backache has been attributed to the stressed postures during labour which may be exacerbated by epidural analgesia (15). Recent prospective studies, however, have indicated that epidural anaesthesia and analgesia are not associated with an increased incidence of prolonged backache (18, 19).

A major concern of epidural analgesia is its potential effect on the duration of labour and mode of delivery. Several studies have reported that epidural analgesia results in a prolonged labour, higher incidence of assisted vaginal delivery, and increased cesarean

section rate (20-22). However, all of these studies were compromised by methodological limitations. While our incidence of cesarean section (11% vs 17%) and instrumental delivery (10% vs 15%) were lower in the epidural group than the overall rates. No conclusion can be drawn as the epidural group and the total obstetric population are not comparable. There are many other factors that influence the outcome of labour, including the likelihood of nulliparous and uncomplicated labour in the epidural group and differences in obstetric management. The perinatal outcome was 100% in our study.

None of the parturients developed urinary retention and incontinence. It is not possible to infer a causal association between urinary retention and incontinence and epidural analgesia, as both conditions also occur in parturients not receiving epidural analgesia, and there is no data from a matched control group (8, 23).

Permanent neurological complications, although rare, may lead to severe disability. None of the parturients developed transient paraesthesia/weakness in the lower limbs. The incidence of neurological complications lasting more than six months in the obstetric population has been reported to be 1 in 2500 (24) and permanent neurological disability was reported to occur in one of every 500000 deliveries (8), regardless of the method of anaesthesia and analgesia. In a recent prospective study, epidural analgesia was considered contributory to a neurological disorder only in one of 13000 deliveries (24). While traumatic mononeuropathy is the most common neurological complication due to epidural analgesia, the majority of patients recover completely (8, 25).

Maternal satisfaction with analgesia was rated as excellent or good in 90%, and just 1% rated their satisfaction as poor, indicating maternal acceptance of this method of analgesia. Although our parturients have no misconceptions regarding epidural analgesia because these parturients know about painless labour. Parturients who received this method of analgesia appeared to have had a positive and favourable experience. That was the reason, these parturients were not landing into cesarean section directly in view of labour pain phobia and we have reduced the cesarean section rate in these groups.

Conclusion

Most public hospitals in India do not provide an obstetric epidural service, although only a few are able to continue the service after hours. Limited resources allocated for this purpose appeared to be the limiting factor. This difficulty may be overcome in future when the Hospital authority highlights obstetric analgesia and anaesthesia as a priority area for development and improvement and this will help to reduce the cesarean section rate in nulliparous parturients having labour pain phobia (intolerance). At present the epidural analgesia rate in our Institute and also in India is lower than reported rates, and explanation is likely multifactorial. Possible reasons, include cultural and racial factors, lack of public awareness and lack of resources and infrastructures about obstetric epidural analgesia. Further studies may elucidate the relative importance of these factors and highlight areas where better public education about epidural analgesia and availability would be of value.

Appendix:

Intermittent epidural analgesia protocol:

Preload with 500 – 1000 mL intravenous normal saline.

Locate the epidural space at the L₂₋₃ or L₃₋₄ interspace using Touhy needle.

Pass epidural catheter via the needle leaving 3 – 5 cm of catheter in the epidural space.

Give a test dose of 3 mL lignocaine 2% with adrenaline 1:200000.

Establish analgesia by titrating bupivacaine 0.125 – 0.25% with or without fentanyl 2 – 5 µg/mL or pethidine 1 – 2.5 mg/mL.

Maintain analgesia by intermittent epidural infusion of bupivacaine 0.125% with fentanyl 2 µg/mL at 5 - 15 mL dose according to patient requirements.

Provide additional bolus top ups of bupivacaine 0.125 – 0.5% in 3 – 5 mL boluses according to patients requirements.

Continue epidural analgesia through the second stage of labour.

Monitoring and nursing instructions:

Monitor non-invasive arterial pressure every 5 min for a minimum of 20 - 30 minutes after every epidural top up and then hourly.

Assess the level of neural block hourly.

Monitor foetal cardiograph continuously.

Inform anaesthetist if the systolic blood pressure falls below 90 mmHg, the block advances higher than T6, if analgesia is inadequate, or if other related problems arise.

References:

1. Brownridge P. Epidural medication after the initial dose: reflections on current methods of administration during labour. *Anaesth Intensive Care*. 1990 Aug;18(3):300-8.
2. Davies MW, Harrison JC, Ryan TD. Current practice of epidural analgesia during normal labour. A survey of maternity units in the United Kingdom. *Anaesthesia*. 1993 Jan;48(1):63-5.
3. Brodsgaard I, Moore R. Acute pain coping model: tooth drilling and childbirth labour pains among Angloamericans, Mandarin Chinese and Scandinavians - Part 2. . Abstracts of the 8th World Congress on Pain; 1996 Aug 17 - 22; Vancouver, Seattle: IASP Press; 1996. p. A 237:89.
4. Houghton IT, Aun CS, Gin T, Lau JT. Inter-ethnic differences in postoperative pethidine requirements. *Anaesth Intensive Care*. 1992 Feb;20(1):52-5.
5. Liu S, Carpenter RL, Neal JM. Epidural anesthesia and analgesia. Their role in postoperative outcome. *Anesthesiology*. 1995 Jun;82(6):1474-506.
6. Smythe M. Patient-controlled analgesia: a review. *Pharmacotherapy*. 1992;12(2):132-43.
7. Purdy G, Currie J, Owen H. Continuous extradural analgesia in labour. Comparison between "on demand" and regular "top-up" injections. *Br J Anaesth*. 1987 Mar;59(3):319-24.
8. Scott DB, Hibbard BM. Serious non-fatal complications associated with extradural block in obstetric practice. *Br J Anaesth*. 1990 May;64(5):537-41.

9. Norris MC, Grieco WM, Borkowski M, Leighton BL, Arkoosh VA, Huffnagle HJ, et al. Complications of labor analgesia: epidural versus combined spinal epidural techniques. *Anesth Analg*. 1994 Sep;79(3):529-37.
10. Norris MC, Leighton BL, DeSimone CA. Needle bevel direction and headache after inadvertent dural puncture. *Anesthesiology*. 1989 May;70(5):729-31.
11. Kenepf NB, Gutsche BB. Inadvertent intravascular injections during lumbar epidural anesthesia. *Anesthesiology*. 1981 Feb;54(2):172-3.
12. Stride PC, Cooper GM. Dural taps revisited. A 20-year survey from Birmingham Maternity Hospital. *Anaesthesia*. 1993 Mar;48(3):247-55.
13. Okell RW, Sprigge JS. Unintentional dural puncture. A survey of recognition and management. *Anaesthesia*. 1987 Oct;42(10):1110-3.
14. MacArthur C, Lewis M, Knox EG. Accidental dural puncture in obstetric patients and long term symptoms. *BMJ*. 1993 Apr 3;306(6882):883-5.
15. MacArthur C, Lewis M, Knox EG, Crawford JS. Epidural anaesthesia and long term backache after childbirth. *BMJ*. 1990 Jul 7;301(6742):9-12.
16. MacLeod J, MacIntyre C, McClure JH, Whitfield A. Backache and epidural analgesia: a retrospective survey of mothers 1 year after childbirth. *Int J Obstet Anesth*. 1995 Jan;4(1):21-5.
17. Russell R, Groves P, Taub N, O'Dowd J, Reynolds F. Assessing long term backache after childbirth. *BMJ*. 1993 May 15;306(6888):1299-303.
18. Macarthur A, Macarthur C, Weeks S. Epidural anaesthesia and low back pain after delivery: a prospective cohort study. *BMJ*. 1995 Nov 18;311(7016):1336-9.
19. Breen TW, Ransil BJ, Groves PA, Oriol NE. Factors associated with back pain after childbirth. *Anesthesiology*. 1994 Jul;81(1):29-34.
20. Stoddart AP, Nicholson KE, Popham PA. Low dose bupivacaine/fentanyl epidural infusions in labour and mode of delivery. *Anaesthesia*. 1994 Dec;49(12):1087-90.
21. Thorp JA, Hu DH, Albin RM, McNitt J, Meyer BA, Cohen GR, et al. The effect of intrapartum epidural analgesia on nulliparous labor: a randomized, controlled, prospective trial. *Am J Obstet Gynecol*. 1993 Oct;169(4):851-8.
22. Ramin SM, Gambling DR, Lucas MJ, Sharma SK, Sidawi JE, Leveno KJ. Randomized trial of epidural versus intravenous analgesia during labor. *Obstet Gynecol*. 1995 Nov;86(5):783-9.
23. Grove LH. Backache, headache and bladder dysfunction after delivery. *Br J Anaesth*. 1973 Nov;45(11):1147-9.
24. Holdcroft A, Gibberd FB, Hargrove RL, Hawkins DF, Dellaportas CI. Neurological complications associated with pregnancy. *Br J Anaesth*. 1995 Nov;75(5):522-6.
25. Ong BY, Cohen MM, Esmail A, Cumming M, Kozody R, Palahniuk RJ. Paresthesias and motor dysfunction after labor and delivery. *Anesth Analg*. 1987 Jan;66(1):18-22.

Table – 1: methods of obstetric analgesia available at the MGIMS.

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| Exercises to promote relaxation and distraction. Intermittent self administration of entonox (50% nitrous oxide in oxygen). Intramuscular pethidine. Epidural analgesia. |
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Table – 2: Methods of epidural administration.

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| Single bolus. Intermittent bolus injection. Continuous infusion. Patient controlled epidural analgesia. Combined Spinal– epidural analgesia. |
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Table-3: Side Effects and Complications associated with epidural analgesia at the MGIMS, Sewagram, India (N=100).

| Complication/Problem | No. of Patients (%) |
|------------------------------|---------------------|
| Venous Puncture | 5(5%) |
| Difficult Catheter Placement | 2 (2%) |
| Dural Puncture | 1 (1%) |
| Post dural puncture headache | Nil |
| Blood patch | Nil |
| Hypotension | 4(4%) |
| Backache | 8(8%) |
| Leg Parasthesia/Weakness | Nil |
| Urinary retension | Nil |
| Urinary incontinence | Nil |
| Pruritus | Nil |
| Nausea/Vomitting | Nil |
| Leg Cramps | Nil |