International Journal of Enhanced Research in Medicines & Dental Care (IJERMDC),
ISSN: 2349-1590, Vol. 9 Issue 12, December 2022, Impact Factor: 7.125

Recent advances in Labour analgesia

Dr. Isha Badhan[1*], Dr. Nishita Kaushal[2]

[1]Medical Officer Specialist (Anesthesia), Regional Hospital Kullu, Himachal Pradesh
[2] Medical Officer Specialist (Anesthesia), Regional Hospital Kullu, Himachal Pradesh

Corresponding Author: Dr. Isha Badhan*

ABSTRACT

Advances in the field of labour analgesia must tread a long journey from the days of ether and chloroform in 1847 to the present-day practice of comprehensive program of labour pain management using evidence-based medicine. Newer advances include the introduction of newer techniques like combined spinal epidurals, low-dose epidurals facilitating ambulation, pharmacological advances like the introduction of remifentanil for patient-controlled intravenous analgesia, the introduction of newer local anesthetics and adjuvants like ropivacaine, levobupivacaine, sufentanil, clonidine and neostigmine, use of inhalational agents like sevoflurane for patient-controlled inhalational analgesia using special vaporizers, all have revolutionized the practice of pain management in labouring parturients. . Recent randomized controlled trials and Cochrane studies have concluded that the association of epidurals with increased caesarean section and long-term backache remains only a myth. Studies have also shown that the newer, low-dose regimes do not significantly impact the duration of labour and breastfeeding. These reduce the instrumental delivery rates, thus improving maternal and foetal safety. Advances in medical technology like an ultrasound for localizing epidural space have helped clinicians minimize failure rates, and many novel drug delivery modalities like PCEA and computer-integrated PCEA have contributed to overall maternal satisfaction and safety.

Keywords: Ambulatory epidurals, labour analgesia, recent advances

INTRODUCTION

Modern neuraxial labour analgesia reflects a shift in obstetrical anaesthesia, thinking away from a simple focus on pain relief towards a focus on the overall quality of analgesia. The International Association for the Study of Pain (IASP) declared 2007–2008 as the ‘‘Global Year against Pain in Women - Real Women, Real Pain.” The focus was to study both acute pain and chronic pain in women. Labour pain was found to be a good study model for treating acute pain. Increasing knowledge of the physiology and pharmacotherapy of pain and the development of obstetric anaesthesia as a subspecialty has improved the training in obstetric anaesthesia, leading to an overall improvement in the quality of labour pain relief. In many countries today, the availability of regional analgesia for labour is considered a reflection of standard obstetric care. According to the 2001 survey, the epidural acceptance is up to 60% in the major maternity centres of the US. The National Health Services Maternity Statistics of 2005–2006 in the UK reported that one-third of the parturients chose epidural analgesia.In our country, the awareness is still lacking and, except few centres that run a comprehensive labour analgesia programme, the national awareness or acceptance of pain-relieving options for women in labour virtually does not exist.Technological advances like use of ultrasound to localize epidural space in difficult cases minimizes failed epidurals and introduction of novel drug delivery modalities like patient-controlled epidural analgesia (PCEA) pumps and computer integrated drug delivery pumps have improved the overall maternal satisfaction rate and have enabled us to customize a suitable analgesic regimen for each parturient.

RECENT ADVANCEMENT

TECHNICAL ADVANCES

A technique and low-dose epidural regimes. With the evolution of sequential “needle-throughneedle” combined spinal epidural technique, it can be safely used to provide labour analgesia. It combines the rapid, reliable onset of profound analgesia resulting from spinal injection with the flexibility and longer duration of epidural techniques.The CSEA kit spinal needle is a fine pencil-point needle that comes with a locking device, which minimizes postdural puncture headache and failed spinals. Use of the spinal opioids provides immediate analgesia without producing any motor block thus producing an ambulatory block. The epidural catheter is activated with low-dose mixtures of opioid and local anaesthetics; hence, the ability to walk is not impaired. A review of the complications has concluded that CSEA is as safe a technique as a conventional epidural technique and is associated with greater patient satisfaction. There were no

differences in maternal satisfaction, mode of delivery and ability to ambulate between CSEA and epidural techniques. Sideeffects and complications, however, can occur, which include pruritus, nausea and vomiting, hypotension, uterine hyperstimulation and foetal bradycardia and maternal respiratory depression. Foetal bradycardia is more pronounced with intrathecal sufentanil, perhaps due to its associated decrease in maternal catecholamines, which may precipitate uterine hypertonicity and foetal bradycardia. However, several recent reports have found neither an increase in these complications nor an increase in the caesarean section rate.

PCEA

PCEA is a novel method of the drug delivery system, providing several advantages, including the ability to reduce the drug dosage. Self-control and self-esteem may be vital for a positive experience in childbirth, and PCEA achieves both. Thus, it is a useful alternative for the maintenance regime.

USE OF ULTRASOUND TO STUDY NEURAXIAL ANATOMY AND LOCALIZE EPIDURAL SPACE

Ultrasound imaging of the spine has recently been proposed to facilitate identification of the epidural space and predict difficult spine score, especially in women with abnormal lumbosacral anatomy (scoliosis) and those who are obese. Carvalho et al., in their study, found a good level of success in the ultrasound-determined insertion point and very good agreement between ultrasound depth (UD) and needle depth (ND). They also concluded that the proposed ultrasound single-screen method, using the transverse approach, can be a reliable guide to facilitate labour epidural insertion. Thus, the epidural failure rate can be minimized in patients with difficult backs.Delayed pushing has been advocated in parturients under neuraxial blockade. Passive descent should be encouraged along with delayed and monitored pushing during birth to safely and effectively increase spontaneous vaginal births, decrease instrumentassisted deliveries and shorten the pushing time. The Pushing Early or Pushing Late with Epidural (PEOPLE) Study also supported delayed pushing for a better outcome.

Epidural analgesia in nonobstetrical patients is generally associated with a slight decrease in body temperature secondary to peripheral vasodilation and redistribution of heat from the core to the periphery. In contrast, observational and randomized studies in obstetric patients demonstrate that epidural analgesia during labour is associated with maternal pyrexia and increased neonatal sepsis workup. The exact cause of maternal pyrexia is not known. The temperature rise generally is never above 1°C with epidural, sometimes observed in women with long labours. Always rule out and treat any underlying cause if the temperature rise is more than 1°C. Irrespective of the cause, any pyrexia during the intrapartum period needs to be aggressively treated with hydration, antipyretics and other appropriate measures. Intrapartum pyrexia due to epidural does not warrant evaluation for neonatal sepsis. Further studies are needed to determine the criteria for performing workups for sepsis in infants of low-risk women who deliver infants at term.

Pharmacogenetics

Pharmacogenetics, or the study of how genes affect the response to drugs, offers the potential to tailor medications to each individual's genetic profile. A significant increase in sensitivity to the analgesic effect of intrathecal fentanyl in labouring women carrying a common variant of the μ-opioid receptor gene was shown.[47] This demonstration of a 1.5- to 2-fold difference in analgesic requirement according to genotype is clinically relevant, because the provision of optimal labour analgesia remains a challenge, with a need to reduce doses and minimize opioid-related side-effects.

CONCLUSION

The most important contribution of recent obstetric anaesthesia research to clinical practice has been the demonstration that early neuraxial labour analgesia does not negatively affect the mode of delivery and, obviously, improves maternal satisfaction. Other immediate applications relate to the choice of rather larger doses of more dilute solutions of bupivacaine– opioid mixtures for initiation and maintenance oflabour analgesia using PCEA. The next generation of pumps might allow the automated delivery of "mandatory" boluses rather than background infusions to ensure a better spread of the infusate and, perhaps, utilize algorithm-based CI-PCEA programs.

REFERENCES

[1]. Van de Velde M, Berends N, Kumar A, Devroe S, Devlieger R, Vandermeersch E, et al. Effects of epidural clonidine and neostigmine following intrathecal labour analgesia: a randomised, double-blind, placebo-controlled trial. Int J ObstetAnaesth 2009;18:207-14.

[2]. Wallet F, Clement HJ, Bouret C, Lopez F, Broisin F, Pignal C, et al. Effects of a continuous low-dose clonidine epidural regimen on pain, satisfaction and adverse events during labour: a randomized, double-blind, placebo-controlled trial. Eur J Anaesthesiol 2010;27:441-7.

[3]. Dewandre PY, Decurninge V, Bonhomme V, Hans P, Brichant JF. Hypotension with clonidine administered during labour. Int J ObstetAnesth 2010;19:149-54.

[4]. Arzola C, Davies S, Rofaeel A, Carvalho JC. Ultrasound using the transverse approach to the lumbar spine provides reliable landmarks for labour epidurals. AnesthAnalg 2007;104:1188-92.

[5]. Leighton BL, Halpern SH, The effect of epidural analgesia on labor, maternal and neonatal outcomes: A systematic review. Am J ObstecGynecol 2002;186:S69-77. 38. Thorp JA, Hu DH, Albin RM, McNitt J, Meyer BA, Cohen GR, et al. A randomized, controlled, prospective trial. Am J ObstetGynecol 1993;169:851-8.
[6]. Wong CA, Scavone BM, Peaceman AM, McCarthy RJ, Sullivan JT, Diaz NT, et al. The risk of caesarean delivery in neuraxial analgesia given early vs late in labour. N Engl J Med 2005;352:655-65.
[7]. American College of Obstetricians and Gynecologists Committee on Obstetric Practice. ACOG committee opinion. No. 339: analgesia and caesarean delivery rates. ObstetGynecol 2006;107:1487-88.
[8]. Brancato RM, Church S, Stone PW. A meta-analysis of passive descent versus immediate pushing in nulliparous women with epidural analgesia in the second stage of labor. J ObstetGynecol Neonatal Nurs 2008;37:4-12.
[9]. Petrou S, Coyle D, Fraser WD. Cost-effectiveness of a delayed pushing policy for patients with epidural anesthesia. The PEOPLE (Pushing Early or Pushing Late with Epidural) Study Group. Am J ObstetGynecol 2000;182:1158-64.
[10]. Torvaldsen S, Roberts CL, Bell JC, Raynes-Greenow CH. Discontinuation of epidural analgesia late in labour for reducing the adverse delivery outcomes associated with epidural analgesia. Cochrane Database Syst Rev 2004;4:CD004457.
[11]. Leighton BL, Halpern SH. The effects of epidural analgesia on labor, maternal, and neonatal outcomes: a systematic review. Am J ObstetGynecol 2002;186:S69-77. 45. Lim Y, Sia AT. Dispelling the myths of epidural pain relief in childbirth. Singapore Med J 2006;47:1096.