

Labour pain and pharmacological pain relief practice points

Maria Iliadou.

RM, MSc, Laboratory Instructor, Midwifery Department, Faculty of Health and Caring Professions, Technological Educational Institution of Athens, Athens, Greece

Abstract

Background: Labour pain is the result of a complex and subjective interaction of multiple physiologic and psychosocial factors on a woman's individual interpretation of labour stimuli. Accurate measurement and appropriate management of pain is a significant problem for attendant medical and nursing personnel. There are choices to be made during pregnancy about options available for pain relief in labour; each method has its own risks and benefits, with variations in effectiveness, availability and acceptability.

Aim: The aim of this review was to explore practice points for the use of pethidine and epidural in labour.

Methods: A thorough literature search was conducted in different nursing and medical databases such as PubMed, Cochrane Reviews and also Google, using relevant with this review key words.

Results: Pethidine has been used extensively in spinal anaesthesia and is used intramuscularly for labour analgesia. Its' popularity is ascribed to its being until recently the only drug for pain relief included in labor ward patient group directives for midwives, and the fact that it is low cost. However, there are considerable doubts about its effectiveness and concerns about its potential maternal, fetal and neonatal side-effects. Epidural analgesia is the only consistently effective method of labor pain relief and has recently undergone substantial improvements to address the concerns of both parturient and obstetric care providers.

Conclusions: Labour pain management includes a broad range of pharmacologic and no pharmacologic intervention strategies. Despite the popularity and effectiveness of pethidine and epidural analgesia it is of great importance to bare in mind the possible side-effects.

Keywords: pain relief, labor pain, pharmacological methods, pethidine, epidural.

Corresponding author:

Iliadou Maria, 11 Miconou Street, Voula
16673 Athens, Greece, Tel : 6946146818, e-mail:
mariailiad1972@yahoo.gr

Introduction

Childbirth is frequently accompanied by pain. For religious, cultural and philosophical reasons many groups have sought to prevent treatment of pain. Pain may have adverse effects on the mother and foetus. The psychological effects of severe pain should not be overlooked particularly where it is associated with an adverse fetal

or maternal outcome. There are a number of different forms of pain relief in labour with differing side-effects and efficacies. The controversy concerning medical management of women in labour has been used to dissuade women from requesting pain relief. This debate has encouraged the use of a patient-centred philosophy of care that

encourages the patient to retain control. However, good pain relief may allow the women to retain control if administered in a sensitive manner.¹

The experience of pain during labour is not a simple reflection of the physiologic processes of parturition. Instead, labour pain is the result of a complex and subjective interaction of multiple physiologic and psychosocial factors on a woman's individual interpretation of labour stimuli. An understanding of labour pain in a multidimensional framework provides the basis for a woman-centered approach to labour pain management that includes a broad range of pharmacologic and nonpharmacologic intervention strategies.² Labor pain relief is an important aspect of women's health that has historically been neglected.³ It has been demonstrated that midwives sometimes underestimate the intensity of the pain experienced by women in labor and overestimate the efficacy of pharmacological pain relief.^{4,5}

Accurate measurement and appropriate management of pain is a significant problem for attendant medical and nursing personnel. Both the experience and perception of pain are regarded as subjective and are therefore difficult to measure objectively. Indeed, much of the literature reports that pain is often under- or over-estimated by nursing staff who as a consequence consistently fail to administer adequate analgesia. Few studies have specifically examined the ability of midwives to assess the pain of labouring women. The cues used by midwives to differentiate pain intensities and qualities are similar to those used in other clinical settings, but may have limited discriminatory value as pain levels become severe.⁵

The implications of study findings for clinical practice include the need for caregivers to provide women with accurate information about the effects of coping strategies and to be alert to aspects of care that may disrupt women's use of strategies.⁶ Finally, as it is reported in a systematic review⁷ of 137 reports of factors influencing women's evaluations of their childbirth

experiences, four factors—personal expectations, the amount of support from caregivers, the quality of the caregiver-patient relationship, and involvement in decision making—appear to be so important that they override the influences of age, socioeconomic status, ethnicity, childbirth preparation, the physical birth environment, pain, immobility, medical interventions, and continuity of care, when women evaluate their childbirth experiences. This leads to the conclusion that the influences of pain, pain relief, and intrapartum medical interventions on subsequent satisfaction are neither as obvious, as direct, nor as powerful as the influences of the attitudes and behaviors of the caregivers.

Many pregnant women have concerns about the pain they will encounter and the methods of pain relief that are available during labour. Women's lack of appropriate knowledge about the risks and benefits of the various methods of pain relief can heighten anxiety.^{8,9} Women are increasingly expected, and are expecting, to participate in decisions about their healthcare, including in pregnancy and childbirth.^{10,11} There are choices to be made during pregnancy about options available for pain relief in labour; each method has its own risks and benefits, with variations in effectiveness, availability and acceptability. Wennberg and others have argued that unexplained variations in practice in the face of uncertainty should lead to greater involvement of patients in decision-making. They argued that this involvement should allow patients to make better-informed decisions by presenting both the clinical evidence and the likely effects of alternative interventions.^{12,13} These recommendations, however, may not be appropriate or indeed feasible for women during the actual process of labour.

Practice points for Pethidine

Meperidine (Pethidine) is a synthetic opioid of intermediate lipid with opioid and local anaesthetic properties.¹⁴ It has been used extensively in spinal anaesthesia and is used intramuscularly for labour analgesia in

doses up to 100 mg.¹⁵ Its popularity is ascribed to its being until recently the only drug for pain relief included in labour ward patient group directives for midwives, and the fact that it is low cost. However, there are considerable doubts about its effectiveness and concerns about its potential maternal, fetal and neonatal side-effects.¹⁶

Concern by midwives and clients about the potentially harmful effects that pharmacological analgesia has upon the mother's birth experience, coupled with the potential compromise of the fetus, is not reflected by the common and widespread use of pethidine within normal midwifery practice.¹⁷ Regarding the side effects of meperidine, sedative effect is reported^{18,19} as well as nausea and vomiting^{18,19} and dizziness.¹⁹ Shnider SM et al., found that meperidine would suppress the respiration of the newborn,²⁰ often leading to one of more injections of the antagonist, naloxone. Other neonatal effects are reported as different behavioural patterns, including a lack of responsiveness to sights and sounds, lassitude and drowsiness.²¹

Olofsson CH et al.,²² described that meperidine acts on the central nervous system but it does not act on the spinal cord. Therefore, at a normal dose, it causes sedation more than pain relief. The parturient would calm down from the sedative effect. Fairlie et al.,²³ in a small randomized controlled trial which compared the effects of pethidine with those of diamorphine, found that there appear to be benefits to the use of diamorphine as the opiate in labor: they found a higher level of pain relief, less maternal vomiting and a lower incidence of low one minute Apgar scores.

Practice Points for Epidural

Epidural analgesia is the only consistently effective method of labor pain relief and has recently undergone substantial improvements to address the concerns of both parturients and obstetric care providers. With increased physician

awareness, these recent advances are becoming more widely accepted and routinely available for all laboring parturients.³

The use of epidural analgesia is considered to be an effective method of pain relief during labour and childbirth from the perspective of women giving birth.²⁴

Controversy continues about the benefits, risks, and costs of intrapartum epidural analgesia.²⁵⁻²⁷ Studies of women delivering their babies at term have suggested an association between the use of conventional lumbar epidural analgesia for pain relief during labour and an increased rate of operative delivery.^{26,28} Particularly for nulliparous women, the timing of the epidural analgesia, as measured by the degree of cervical dilatation, has been identified as a factor in the association between epidural analgesia and the diagnosis of dystokia.²⁹ Studies have found an association between the use of analgesia and an increased risk of dystocia, as compared with that among women receiving systemic narcotics alone.²⁶⁻²⁹ Epidural analgesia is associated with longer first and second stages of labour, an increased incidence of fetal malposition, an increased use of oxytocin and instrumental delivery.³⁰ Other associated risks are maternal intrapartum fever, neonatal sepsis evaluations, and neonatal antibiotic treatment.³¹⁻³⁴

The most common procedure - related complications, hypotension, inadvertent dural puncture, and headache, are easily treated and usually self-limited. Permanent morbidity and mortality are rare.³⁵

Women seem to prefer the low-dose combined spinal-epidural technique to standard epidurals, perhaps because of the faster onset, less motor block, and feelings of greater self-control. The combined spinal-epidural (CSE) technique is used in many institutions to provide labor analgesia. CSE anesthesia can offer advantages versus epidural analgesia alone, including rapid onset of analgesia and reduced motor block, resulting in greater ambulation.³⁶ Midwives and doctors can recommend this form of pain

relief. However, information about possible associations with adverse effects in mothers and infants must be provided to expectant couples.²⁵

Conclusion

If women are well prepared during pregnancy, then they are more likely to have realistic expectations of the levels of pain, less likely to feel a failure and have increased confidence, which in turn can lead to more a positive experience. Women may have ideal hopes of what they would like to happen, but they need to be educated or informed to ensure that they are prepared for what might actually happen and give them the tools to deal with this.

As far as it concerns the use of pethidine and epidural analgesia it turns out that despite their popularity and effectiveness it is of great importance to bare in mind the possible side-effects.

Bibliography

- 1) May AE., Elton CD. The effects of pain and its management on mother and fetus. *Baillieres Clin Obstet Gynaecol.* 1998;12(3):423-41.
- 2) Lowe NK. The pain and discomfort of labour and birth. *J Obstet Gynecol Neonatal Nurs.* 1996;25(1):82-92.
- 3) Campbell D. Parenteral Opioids for Labor Analgesia. *Clinical Obstetrics & Gynaecology.* 2003;46(3):616-622.
- 4) Niven C. Coping with labour pain: the midwife's role In: Robinson S and Thomson A M (eds) *Midwives, Research and Childbirth Vol3* London: Chapman and Hall,1994.
- 5) Baker A., Ferguson S., Roach G., Dawson D. Perceptions of labour pain by mothers and their attending midwives. *Journal of Advanced Nursing.*2001;35:171-179.
- 6) Spiby H., Slade P., Escott D., Henderson B., Fraser R. Selected Coping Strategies in labour: An investigation of women's Experience. *Birth.*2003; 30(3):189-194.
- 7) Hodnett E. Pain and women's satisfaction with the experience of childbirth: A systematic review. The nature and management of Labor. *Pain American Journal of Obstetrics & Gynecology.* 2002;186(5):160- 172.
- 8) Abdullah NR. Pain relief in labour: parent education in the community. *Medicine.* Newcastle upon Tyne: Medical School, University of Newcastle, 2002.
- 9) Raynes-Greenow CH., Roberts CL., McCaffery K., Clarke J. Knowledge and decision-making for labour analgesia of Australian primiparous women. *Midwifery.* 2007;23:139–145.
- 10) Bekker H., Thornton JG., Airey CM., Connelly JB., Hewison J., Robinson MB et al., Informed decision making: an annotated bibliography and systematic review. *Health Technology Assessment.* 1999;3:1–156.
- 11) Say RE., Thomson R. The importance of patient preferences in treatment decisions – challenges for doctors. *BMJ.*2003; 327:542–545.
- 12) Wennberg J., Gittlesohn A. Variations in medical care among small areas. *Sci Am.* 1982; 246:120–134.
- 13) Hingorani A., Vallance P. A simple computer program for guiding management of cardiovascular risk factors and prescribing. *BMJ.* 1999; 318:101–105.
- 14) Norris MC., Grieco WM., Borkowski M., Leighton BL., Arkoosh VA., Huffnagle HJ: Complications of labour analgesia: Epidural versus combined spinal epidural techniques. *Anesth Analg.* 1994; 79:529-37.
- 15) Robinson JO., Rosen M., Evans JM., Revill SI., David H., Rees GA.: Self administered intravenous and intramuscular pethidine: A controlled trial in labour. *Anaesthesia.* 1980; 35: 763-70.
- 16) Elbourne D., Wiseman RA. Types of intramuscular opioids for maternal pain relief in labour (Cochrane Review) In: *Cochrane Library, Issue 1.* Chichester, UK: John Wiley and Sons Ltd,2004.
- 17) Heelbeck L. Administration of pethidine in labour. *British Journal of Midwifery.*1999; 7(6):372-377.
- 18) Harper NJN., Thomson J., Brayshaw SA. Experience with self-administered pethidine with special reference to the

- general practitioner obstetric unit. *Anaesthesia*.1983;38:52-5.
- 19) Morrison CE., Dutton D., Howie H., Gilmour H. Pethidine compared with meptazinol during labour. A prospective randomized double blind study in 1100 patients. *Anaesthesia* 1987;42:7-14.
 - 20) Shnider SM., Moya F. Effects of meperidine on the newborn infant. *Am J Obstet Gynecol* .1984; 89: 1009-15.
 - 21) Priest J., Rosser J. Pethidine – a shot in the dark. *MIDIRS Midwifery Digest* 1991;1: 373-375.
 - 22) Olofson CH. Lack of analgesic effect of systemically administered morphine or pethidine on labour pain. *Br J Obstet Gynecol*. 1996; 103: 968-72.
 - 23) Fairlie F., Marshall L., Walker J., Elbourne D. Intramuscular opioids for maternal pain relief in labour: a randomised controlled trial comparing pethidine with diamorphine. *British Journal of Obstetrics and Gynaecology*.1999; 106: 1181- 1187.
 - 24) Nystedt A., Edvardsson D., Willman A. Epidural analgesia for pain relief in labour and childbirth- a review with a systematic approach. *J Clin Nurs*. 2004;13(4):455-66.
 - 25) Thorp JA., Hu DH., Albin RM., et al., The effect of intrapartum epidural analgesia on nulliparous labor: a randomized, controlled, prospective trial. *Am J Obstet Gynecol* 1993;169:851-858.
 - 26) Ramin SM., Gambling DR., Lucas MJ., Sharma SK., Sidawi JE., Leveno KJ. Randomized trial of epidural versus intravenous analgesia during labour. *Obstet Gynecol*. 1995;86:783-789.
 - 27) Chestnut DH., McGrath JM., Vincent RD Jr., Penning DH., Choi WW., Bates JN., et al. Does early administration of epidural analgesia affect obstetric outcome in nulliparous women who are in spontaneous labor? *Anaesthesiology*. 1994;80:1201-1208.
 - 28) Thorp JA., Eckert LO., Ang MS., Johnston DA., Peaceman AM., Parisi VM. Epidural analgesia and caesarean section for dystocia: risk factors in nulliparas. *Am J Perinatol*. 1991;8:402-410.
 - 29) Lieberman E., Lang JM., Cohen A., D'Agostino R., Datta S., Frigolletto FD. Association of epidural analgesia with caesarean delivery in nulliparas. *Obstet Gynecol* .1996;88:993-1000.
 - 30) Howell C. Epidural versus non-epidural analgesia for pain relief in labour (Cochrane Review) In: *Cochrane Library*, Issue 1. Chichester, UK: John Wiley and Sons Ltd, 2004.
 - 31) Bartholomew ML., Ashkin E., Schiffman A., Larsen J. Maternal Temperature Variation During Parturition. *Obstet Gynecol*. 2002; 100(4): 642-647.
 - 32) Cohen Y., Vallejo M.C., Kaul B., Ramanathan S. Epidural analgesia and maternal fever. *Can J Anesth*. 2002; 49(7):760.
 - 33) Haque K.N., Radford P., Goetzl L., Lieberman E., Cohen A., Frigoletto F. Epidural analgesia and Fever. *Paediatrics*. 2002;110(1):196-197.
 - 34) Yancey M.K., Zhang J., Schwarz J., Dietrich C.S., Klebanoff M. Labor Epidural Analgesia and Intrapartum Maternal Hyperthermia. *Obstet Gynecol*. 2001;98(5):763-770.
 - 35) Thorp JA., Breedlove G. Epidural analgesia in labour: an evaluation of risks and benefits. *Birth*. 1996;23(2):63-83.
 - 36) Collis R., Davies W., Aveling W. Randomised comparison of combined spinal-epidural and standard analgesia in labour. *Lancet*. 1995; 345: 1413-1416.