CASE REPORT

Case Study on the Effect of Epidural Analgesia on Pain Management During Labour

HO SE[1], SUMATHI U[1], ISMAIL MS[2], CHOY YC[3], AHMAD ZAILANI H[4], LIU CY[3]

Department of [1]Nursing, [2]Emergency Medicine, [3]Anaesthesiology, and [4]Obstetrics & Gynecology, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Center, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia.

ABSTRAK

Rasa sakit merupakan suatu perasaan yang sangat kurang enak dan tidak menyenangkan. Wanita hamil akan merasakan kesakitan yang amat sangat semasa melahirkan anak. Walaupun rasa sakit yang amat kuat tidak membawa kemudaratan yang mengancam nyawa, namun ianya boleh meninggalkan kesan neuropsikologi yang ketara. Misalnya kemurungan lepas bersalin adalah lebih kerap dilaporkan bagi mereka yang tidak menerima ubat analgesia dan kesakitan kuat yang dialami semasa bersalin adalah berkait rapat dengan kejadian gangguan-tekanan-pasca-trauma. Pemberian bius epidural semasa bersalin melibatkan pemberian ubat bius setempat di kawasan tulang belakang. Ianya dianggap sebagai rawatan piawai bagi melegakan kesakitan semasa proses bersalin. Kami ingin berkongsi satu kajian kes yang melibatkan seorang pesakit berusia 37 tahun gravida 1 para 0 yang dirawat dengan bius epidural bagi mengawal kesakitan semasa melahirkan anak.

Kata kunci: kesakitan, pengurusan, analgesik, epidural, bersalin

ABSTRACT

Child birth is associated with severely painful experience for the parturient, and often exceeds one's expectations. Even though, severe pain is non life-threatening condition in healthy parturient women, it may lead to undesired neuropsychological consequences. When no analgesia was used, postnatal depression may be more common, and this labour pain leads to the development of post-traumatic stress disorder. Epidural analgesia is now considered gold standard for effective pain relief during labour. We here report a case of a 37-year-old G1 P0 patient at term gestation who successfully used epidural analgesia for labour pain management.

Keywords: pain, management, analgesia, epidural, labour

Address for correspondence and reprint requests: Assoc. Prof. Ho Siew Eng, Department of Nursing, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Center, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia. Tel: 603-91456262 Fax: 603-91456683 Email: ho@ppukm.ukm.my/ angieho88@gmail.com

INTRODUCTION

Pain is a common symptom in medical practice, usually associated with advanced illness or other acute or chronic conditions. It is the symptom that most patients and their families fear most. Child birth is associated with severe pain for most women, (Hiltunen et al. 2004). To few, it can be their greatest pain during their lifetimes (Catterall & Mackie 2006). Labour pain is caused by uterine contractions and cervical dilatation. Pain sensation is conveyed through visceral afferent (sympathetic) nerves entering the spinal cord from T10-L1 through L1 levels. In the later phase of labour, perineal stretching causes painful stimuli transmitted through the pudendal nerve and sacral nerves from S2,3,4 levels. This pain increases maternal stress response and may lead to increase in the release of corticotrophin, cortisol, noradrenaline, B-endorphins, and adrenaline. Adrenaline may have relaxant effects on the uterus and may prolong labour. Catecholamine release may also increase maternal cardiac output, systemic vascular resistance, and oxygen consumption. In few cases with preexisting cardiac or respiratory insufficiencies, this excessive catecholamine release may be life-threatening.

Epidural, spinal (intrathecal), and combined techniques are the most effective means of pain relief during labour. These are known as regional techniques because pain relief is limited to a specific region in the body. Epidural analgesia is considered as the gold standard for effective pain management in labour (SOGC 2004). Epidural analgesia during labour and delivery encompass the injection of local anesthetic agents such as lignocaine, bupivacaine or ropivacaine and an opioid analgesic agent such as morphine or fentanyl injected into the lumbar epidural space (Catterall & Mackie 2006). The injected agents gradually diffuse across the dura into the subarachnoid space, where they act primarily on the spinal nerve roots and to some extend on the spinal cord and paravertebral nerves. Oftenly combined with epidural analgesia, spinal analgesia involves the injection of analgesic agents directly into the subarachnoid space, resulting in rapid onset of analgesia (Catterall & Mackie 2006). The drug concentration and volume of local anaesthetics, and opioids used for epidural analgesia are tailored to the stages of labour and the parturient's preference or need for analgesia. Commonly during early labour, 12-14 ml of 0.1% bupivacaine with 2 mcg/ml of fentanyl may suffice. These epidural medications are administered into the epidural space to avoid complications related to inadvertent procedures.

CASE REPORT

We here report a case of a 37-year-old primigravida, married for three years, who had a history of uterine fibroid and sub-fertility. She was not on any treatment for her uterine fibroid. For this pregnancy, she had history of premature contraction with administration of intra-muscular dexamethasone during her second trimester. At term, she was admitted to

our hospital in latent phase of labour with mild uterine contractions. Vaginal examination revealed her cervical was 2 cm dilated. She was observed and transferred to labour room when her os was 4 cm dilated. Artificial rupture of membrane was performed and she was offered epidural analgesia to reduce her labour pain.

Patient agreed for epidural analgesia after the attending obstetrician had explained the benefits and possible adverse effects of epidural analgesia to her and her husband. An anaesthetist further counselled the patient and proceeded with epidural catheter insertion after taking written consent. A test dose of 4 ml ropivacaine 0.2% was administered slowly whilst observing for any adverse reactions. Epidural infusion of ropivacaine 0.2%. and 2 mcg/ml of fentanyl was subsequently started at 7 ml/hr. The patient's vital signs were stable with sedation score of 1/10 and pain score of 1/10. Foetal heart rate was between 122-140 beats per minute.

Following three hours of active labour, the patient's cervix was fully dilated. She was encouraged to bear down in order to shorten the second stage of labour. She could still feel the tightening and urge to bear down without any pain. Episiotomy was perfomed on crowning of baby's head without any local anaesthesia. After 25 minutes, a vigorous baby boy, crying at birth, with APGAR score 9 in 1 minute and 10 in 5 minutes was delivered. The baby was born healthy with a weight of 2.93 kg. The epidural analgesia infusion was tapered down until episiotomy repair was completed and removed after one hour. Patient and baby were later discharged to General Ward, eventually.

DISCUSSION

Epidural analgesia during labour is common. Nurses attending to patients on epidural analgesia must possess adequate knowledge about its indications and contra-indications, and have skills in monitoring its effectiveness and potential complications (Dickinson et al. 2003). The nurses should be apt in assessing the sensory level of the epidural analgesia, usually by using an ice cube in a rubber glove in order to determine the epidural block height. If the patient is unable to detect a cold sensation at/or above the nipple line (at T4 thoracic level), the epidural infusion should be stopped immediately, as the epidural block is too high. They must also prepare, check and update the resuscitation equipment and drugs that may be used during labour.

Monitoring of the patient's vital signs is also important to ensure their safety in labour. Should there be any fall of systolic blood pressure below 100 mmHg or if the patient becomes sleepy and difficult to arouse, the epidural infusion should be stopped immediately and the attending doctors informed (Capogna et al. 2007). Occasionally during labour, there may be sudden hypotensive episodes. During such instances, while alerting the doctors, the nurses should turn the patient to her side; increase the intravenous fluid flow rate and supplement oxygen via a face mask. For patients with excessive drowsiness due to opioids, naloxone

may have to be considered (Kumar & Paes 2003).

During the second stage of labour, constant reassurance and encouragement by the nurses to the patient is essential to achieve successful pain management. In addition, patients' epidural acceptance during labour may increase the success of pain management (Pugliese et al. 2013).

According to Niesen and Jacob (2013), the initiation of labour analgesia has been reported to have a higher degree of maternal satisfaction while in labour compared to conventional pain management techniques. It is known that instrumental delivery is common with the use of epidural analgesia during labour. The nurses should guide the patient to push using the correct technique during these procedures. At all times, the nurse should closely monitor foetal well being and mother's condition to ensure a safe delivery (Hansen et al. 2002).

CONCLUSION

We believe that patient's education and readiness to accept epidural analgesia during labour is very important as it enhances the success of an epidural analgesia. Pain management should be individualised to cater to every parturient. Epidural analgesia is the most effective form of intra-partum analgesia currently available in Malaysia. It is particularly beneficial for parturients with medical problems such as hypertension and cardiac disorders.

REFERENCES

Capogna, G., Camorcia, M., Stirparo, S. 2007. Expectant father's experience during labor with or without epidural analgesia. *Int J Obstet Anesth* **16**(2): 110-115.

Catterall, W.A., Mackie, K. 2006. Local anesthetics. In: Brunton, L.L., Lazo, J.S., Parker, K.L. (eds). *Goodman & Gilman's the pharmacological basis of therapeutics*. 11th edn. New York: McGraw-Hill, Medical Publishing Division; 369-386.

Dickinson, J.E., Paech, M.J., McDonald, S.J., Evans, S.F. 2003. Maternal satisfaction with childbirth and intrapartum analgesia in nulliparous labor. *Aust N Z J Obstet Gynaecol* **43**(6): 463-468.

Hansen, S.L., Clark, S.L., Foster, J.C. 2002. Active pushing versus passive fetal descent in the second stage of labor: a randomized controlled trial. *Obstet Gynecol* **99**(1):29-34.

Hiltunen, P., Raudaskoski, T., Ebeling, H., Moilanen, I. 2004. Does pain relief during delivery decrease the risk of postnatal depression? *Acta Obstet Gynecol Scand* **83**(3): 257-261.

Kumar, M., Paes, B. 2003. Epidural opioid analgesia and neonatal respiratory depression. *J Perinatol* **23**(5):425-427.

Niesen, A.D., Jacob, A.K. 2013. Combined spinal-epidural versus epidural analgesia for labor and delivery. *Clin Perinatol* **40**(3):373-384.

Pugliese, P.L., Cinnella, G., Raimondo, P., De Capraris, A., Salatto, P., Sforza, D., Menga, R., D'Ambrosio, A., Fede, R.N., D'Onofrio, C., Consoletti, L., Malvasi, A., Brizzi, A., Dambrosio, M. 2013. Implementation of epidural analgesia for labor: is the standard of effective analgesia reachable in all women? An audit of two years. *Eur Rev Med Pharmacol Sci* **17**(9): 1262-1268.

Society of Obstetricians and Gynecologists (SOGC). 2004. *Cesarean Section on Demand – SOGC's position*. Ottawa: Society of Obstetricians and Gynaecologists of Canada. http://apps.fims.uwo.ca/NewMedia2007/resources/10/reports/Elective_Caesareans_-_position_statement-2004[1].pdf. [Accsessed on 17 January 2014]