



The Effect of Epidural Analgesia on Neonate – A Review

Sujisha Surendran, Roshni P.R*

Amrita School of Pharmacy, Aims Health Care Campus, Amrita Viswa Vidyapeetham University, Kochi, Kerala, India.

*Corresponding author's E-mail: roshnivipin@gmail.com

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ABSTRACT

The intended and unintended effects of epidural labor analgesia are reviewed. The effects of epidurals on newborns are somewhat ambiguous, and many factors can affect the health of a newborn. Analgesic method does not affect foetal oxygenation, neonatal pH, or 5-minute APGAR scores. Epidural analgesia is a very safe and effective form of analgesia in interests of maternal and foetal welfare. Epidural analgesia did not appear to be inhibiting effective breast feeding and neuro behavioural status of the neonate. Good communication and a team effort are needed to reap the benefits of pain free labour, while minimizing the potential effect of epidural analgesia on labour and neonatal outcome.

Keywords: Epidural analgesia, labour pain, neonate.

INTRODUCTION

Human body can bear only 45 del unit of pain .But at the time of giving birth ,a women feels up to 57 del of pain. This is similar to 20 bones getting fractures at a time. Labor pain is known and defined as one of the most severe varieties of pain. So the pain relief in labour is an important issue for women. The type of pain relief used in the labour may impact on breast feeding and mother infant interaction.¹² Labour pain is the common phenomenon that can be mitigated by pharmacologic and non pharmacologic methods.⁹ Relaxation therapies ,distraction techniques and continues support are believed to help a women in labour to use their own resources to cope with pain. Other non pharmacologic methods include acupressure, acupuncture, reflexology, aromatherapy, transcutaneous electrical nerve stimulation and intradermal injection of sterile water.¹⁰ Other measures such as laboring in water, manage acupuncture and hypnosis may be helpful therapies for pain management in labour.¹ Inhalation of nitrous oxide, parenteral injection of opioid and regional anesthesia in form of epidural and combined spinal epidural are commonly used pharmacologic methods. Today the most frequently used and the most used method is epidural analgesia. Epidural analgesia, involves the injection of a local anesthetic into the lower region of the spine.

The American college of Obstetricians and Gynecologists publishes the opinion that maternal request is sufficient justification for pain relief during labour. Also they pointed out that 'there is no other circumstances where it is considered acceptable for a person to experience severe pain, amenable to safe intervention while under a physician's care'.² Epidural analgesia allows the women to remain alert. The epidural may help to avoid the systemic effects of analgesia on baby like opioid induced neonatal respiratory depression.

Effect of epidural analgesia on neonate may be mixed. High cord pH values and less naloxone use have been reported at birth as has a greater need for neonatal resuscitation.^{3,4} Since the introduction of this technique into the labour ward, the clinical benefit in terms of reduction of labour pain has been enormous. However the unintended adverse effects of the epidural analgesia on the infant are concerned. The procedure has few contraindications, the primary ones being the patient refusal, maternal haemorrhage, and coagulopathy.¹¹ In order to separate out the fetal and neonatal effects of interventions from concomitant medical and nursing management and from the preexisting maternal conditions, the anesthesiologists have been used by several methods:

APGAR score – To monitor the neonatal conditions which include heart rate, muscle tone, respiratory effort, colour, reflex irritability at 1 and 5 minutes after birth. The APGAR score depend on the physiologic maturity of the infant.

Umbilical cord, blood gas analysis – Considered as the gold standard for assessing the uteroplacental function and fetal acid base status at birth. The umbilical cord values indicate the maternal acid base status and placental function. Umbilical artery pH, base excess and Pco₂ reflect the fetal and immediate neonatal condition. The values may also vary with differences in the sampling technique. While the umbilical artery Ph, base excess and pco₂ are considered as the objective indicators of fetal hypoxia.

Electronic fetal monitoring – The fetal heart rate which includes the accelerations, decelerations, and variability, if any recorded which should be recorded electronically on paper trace. The baseline fetal heart rate normally ranges from 110 to 160 beats per minute. Continuous fetal heart rate is monitored by the anesthesiologists to examine the effect of analgesia.



Newborn neuro behavior – The reliability and validity evaluations of the tool were lacking and it was unclear whether the Neurologic and adaptive capacity score (NACS) could detect the existence of subtle neurobehavioral effects.⁵

Fetal pulse oximetry – Measured by the blood gas analysis. A critical threshold for SPO₂ exists above which the fetus will be non acidemic and below, which acid base decompensation may occur. Fetal wellbeing is dependent on perfusion of vital organs with oxygenated blood, SPO₂ which is correlated with saturation.⁶

The neonates whose mother received parenteral opioids require naloxone and have low one minute APGAR score more frequently than do neonates whose mothers received epidural analgesia.¹³ The epidural analgesia does not affect the one and five minutes APGAR score. Reynolds et al recently completed a meta analysis, comparing epidural with systemic opioid analgesia to determine the effect of these anesthetic interventions on acid base status at birth. They concluded that the epidural analgesia was associated with an improvement in base excess, suggesting that placental exchange is well preserved in association with this technique.⁷ There is no difference in the pre and post epidural baseline fetal heart rate, accelerations or variability while giving epidural analgesia.

Epidural analgesia have a negative impact on breast feeding in the first 24 hours of life even though it did not inhibit the percentage of breast feeding attempts in the first hour. Epidural analgesia did not appear to be inhibitive effective breast feeding and neuro behavioural status.⁸

CONCLUSION

The well being of the fetus and the newborn is a major criterion in the evaluation of the pain management of pregnant women during labor. No consistent differences have been identified in neonatal arterial pH or APGAR scores in babies who are born to mothers with epidurals. The administration of the analgesia would be safe and efficacious for the mother and fetus, which should not have short or long term impact on neonatal outcome. A good APGAR score goes a long way in proving its safety with regards to the fetus and neonate as well. There was no evidence of immediate effects of the baby; however, long-term consequences are still not known.

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