

Should remifentanyl be used for labour analgesia?

In the UK, estimates for opioid use showed that overall 34% of women used pethidine or another opioid for labour analgesia, with variation between NHS hospital trusts of between 5% and 66% (Healthcare Commission, 2007). A Cochrane review of opioids in labour analgesia concluded that there was insufficient evidence to assess which provided the best pain relief with the least adverse effects, because of the small sample sizes and low statistical power of the available studies (Ullman et al, 2010).

Remifentanyl is an ultra-short acting opioid and a μ -receptor agonist. It acts quickly (30–60 seconds), has maximal effect at 2.5 minutes and an extremely short elimination half-life of 10–20 minutes because it is metabolized by plasma esterases (unique among opiates). It has a short context-sensitive half-life (time needed to achieve a 50% reduction of concentration in blood after cessation of infusion that maintains a steady state) of 3.5 minutes. Although it readily crosses the placenta, it is rapidly metabolized and redistributed both by the mother and by the fetus. This makes it an ideal opioid that can be used over a prolonged period (such as during labour) without the risk of accumulation. The usual regimen for administering remifentanyl is intravenous patient-controlled analgesia with a dose of 40–50 μ g bolus with a lock-out period of 2 minutes via a dedicated cannula with monitoring the pulse, blood pressure, and respiratory rate along with oxygen saturation.

The case for using remifentanyl

Patients receiving remifentanyl patient-controlled analgesia as a labour analgesic have lower pain scores than those receiving traditional opioids (pethidine, fentanyl) and entonox, with fewer requiring conversion to epidural analgesia.

Dr R McGuire is ST2 in Anaesthetics and **Dr K Bhatia** is Consultant Anaesthetist in the Department of Anaesthesia, Central Manchester University Hospitals and St Mary's Hospital, Manchester M13 9WL

Correspondence to: Dr K Bhatia
(kailash.bhatia@cmft.nhs.uk)

Data summarized in a discussion by Hill and Van de Velde (2008) indicated that while remifentanyl provided only moderate analgesia in labour, 90% of patients were satisfied with the level of analgesia achieved. This was further confirmed in a recent meta-analysis of 12 randomized controlled trials of remifentanyl for labour analgesia (Schnabel et al, 2012), which indicated that although women receiving epidurals reported lower pain scores than those receiving remifentanyl, satisfaction scores were similar in both the groups.

Remifentanyl patient-controlled analgesia also provides a viable alternative in parturients for whom epidural analgesia is contraindicated (patient refusal, coagulopathy, sepsis and severe pre-eclampsia with thrombocytopenia). Further, it is easy to set up and is devoid of the neuraxial complications of epidurals.

A heartening aspect of the use of remifentanyl patient-controlled analgesia for labour analgesia has been that no studies have reported an excess of non-reassuring cardiotocography traces or poor neonatal outcome (Apgar scores <7 or the need for naloxone). Thus it compares favourably with pethidine, which carries risks of delayed adverse effects in the neonate up to 72 hours after delivery.

The case against remifentanyl

Like all opioids, remifentanyl also causes nausea, vomiting, sedation and itching in almost 60% of the parturients. Further maternal oxygen desaturation (and respiratory depression) is the most common and a significant risk associated with the use of remifentanyl patient-controlled analgesia in labour necessitating the use of oxygen (Schnabel et al, 2012).

A recent case report of respiratory arrest requiring a short period of bag-valve-mask ventilation in a healthy obstetric patient using remifentanyl patient-controlled analgesia is also concerning (Bonner and McClymont, 2012). Thus its use in labour clearly mandates one to one midwifery care with appropriate monitoring and training for midwives, which may not be feasible in all maternity units, as a significant number of women deliver in midwifery-led units.

Although a 40–50 μ g bolus via patient-controlled analgesia is a commonly used dose, different studies have used different doses for the bolus, with some using low dose continuous infusions and a bolus for labour analgesia. A clear dosage regimen still does not exist for administering remifentanyl.

Further most of the studies have been small with very few randomized trials and there is insufficient evidence regarding the risk–benefit of remifentanyl being used as a labour analgesic.

Conclusions

The available evidence suggests that remifentanyl patient-controlled analgesia is a promising alternative as a labour analgesic to other parenteral opioids and when epidural is contraindicated, as a result of its pharmacokinetics and encouraging data regarding its analgesic efficacy and neonatal outcomes. Appropriate monitoring with strict protocols, training and one to one midwifery care are mandatory in delivery units using this opioid for labour analgesia. Although currently its use will only be limited to consultant-led delivery units, more data need to be published on maternal safety before its uniform uptake across various delivery units. **BJHM**

Bonner JC, McClymont W (2012) Respiratory arrest in an obstetric patient using remifentanyl patient controlled analgesia. *Anaesthesia* **67**(5): 538–40

Healthcare Commission (2007) Women's experiences of maternity care in the NHS in England. Key findings from a survey of NHS Trusts. Commission for Healthcare Audit and Inspection, London

Hill D, Van de Velde M (2008) Remifentanyl patient-controlled analgesia should be routinely available for use in labour. *Int J Obstet Anesth* **17**(4): 336–42

Schnabel A, Hahn N, Broscheit J et al (2012) Remifentanyl for labour analgesia: a meta-analysis of randomised controlled trials. *Eur J Anaesth* **29**(4): 177–85

Ullman R, Smith LA, Burns E, Mori R, Dowswell T (2010) Parenteral opioids for maternal pain management in labour. *Cochrane Database Syst Rev* **9**: CD007396

Anaesthetic and critical care dilemmas are coordinated by Dr Steven Cone and Dr Matthew Henley, Specialist Registrars in Anaesthetics, Royal Free Hospital, London

Ideas for future dilemmas can be sent to Rebecca Linssen rebecca.linssen@markallengroup.com