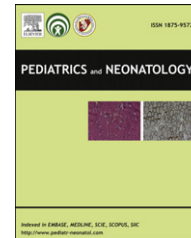


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LETTER TO THE EDITOR

Remifentanil in Neonates: A Promising Compound in Search of its Indications?

We welcome the report of Sammartino et al on their experience with remifentanil in preterm infants undergoing laparotomy.¹ Pain treatment is part of the quality of neonatal care, both from an ethical and clinical outcome perspective.² Analgo-sedation in neonates is based on assessment, administration of the appropriate analgesic (pharmacokinetics) and reassessment (pharmacodynamics).² Remifentanil is metabolized by plasma esterases, resulting in rapid predictable clearance, irrespective of liver or renal function, and esterase activity is at an adult level of activity at birth.^{1,3} Remifentanil has been used mainly for short procedures such as endotracheal intubation, retinal laser surgery or percutaneous intravenous central catheter placement.³ As clinical pharmacologists and neonatologists interested in neonatal pain, we would like to place remifentanil in a broader perspective of peri- and postoperative care.

Although remifentanil pharmacokinetics are predictable, caregivers have to be aware that there are also pharmacodynamic effects. Remifentanil-related analgo-sedation disappears very soon after discontinuation.³ For major surgery, such as laparotomy, anticipation and replacement by another, longer-acting opioid or non-opioid analgesic is needed, or the remifentanil infusion should be prolonged. Further continuation will more likely result in opioid-induced tolerance or hyperalgesia because these phenomena are more common when opioids with a short elimination half-life are administered.

Shifts in neonatal clinical care towards less invasive techniques have resulted in a shift in pharmacodynamic endpoints (e.g., short-acting sedation).² As a result of its profile (esterase, short elimination half-life, intravenous), remifentanil is a good option for analgo-sedation for short-duration invasive procedures. In contrast, we strongly advise also to consider the very same specificities of remifentanil (i.e., very short-acting analgesia, tolerance and hyperalgesia), making this drug only poorly

indicated after major surgery. Focused studies in neonates on hyperalgesia, tolerance and neuro-developmental outcome are needed. Until these data are available, remifentanil in neonates remains a promising compound in search of its indications, most likely procedural analgo-sedation.

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