Remifentanil Versus Fentanyl for Intravenous Patient-Controlled Labor Analgesia: A Retrospective Study

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Introduction: Intravenous patient-controlled analgesia (IVPCA) is an alternative technique for management of labor pain in women with contraindications to or unwillingness to receive epidural analgesia. The objective of our study was to compare the analgesic efficacy and neonatal effects of remifentanil (R) and fentanyl (F) IVPCA in labor.

Methods: After REB approval, we conducted a retrospective chart review of patients receiving IVPCA during labor at our institution between November 2005 and March 2010. We reviewed records of patients >24 weeks gestational age with live infants. The IVPCA regimen using remifentanil or fentanyl was noted, and data was compared for maternal hourly pain and sedation scores, and adverse effects as well as for neonatal outcome between the groups. Mixed linear modeling was used to analyze longitudinal data on pain scores over time. The exact Wilcoxon and the Fisher’s exact test were used for other comparisons.

Result: 98 women were studied (47 in Group R and 51 in Group F). A standard IVPCA regimen consisted of: Group R: PCA bolus 0.25 mcg/kg, lockout 2 min, 4 h-limit 3 mg and background infusion 1.5 -3.0 mcg/kg/h; Group F: PCA bolus 25-50 mcg, lockout 3-6 min and 4 h-limit 1-1.5 mg. There was no difference in patient demographics, or obstetric and delivery data between the two groups. There was no significant difference in the model-adjusted pain scores between the two groups (p=0.86); in both groups there was moderate decrease in pain scores compared to the baseline values (maximum D decrease 3.5±1.9 cm in Group R and 2.3±1.1 cm in Group F). Only a few patients crossed over to epidural analgesia (15% Group R vs 12% Group F, p=0.65). There was no difference in maternal side effects between the two groups, although a higher trend towards drowsiness (9% vs 4%; p=0.423) and desaturation (13% vs 2%; p=0.053) was observed in Group R. These side effects were transient and easily reversible. A larger number of neonates required resuscitation in Group F (35% vs 17%, p=0.041) (Fig 1).

Discussion: Both fentanyl and remifentanil IVPCA regimens provide satisfactory labor analgesia, although transient maternal adverse effects may be seen with remifentanil. Given the higher need for resuscitation of the neonates in fentanyl group, it should be administered only when resuscitation equipment and personnel are immediately available.

* Hatched lines represent the percentage of resuscitated neonates that required intubation.