Abstract # 59

Intravenous Continuous Dexmedetomidine Infusion and On-Demand Remifentanil for Labor Analgesia

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We report a case of 32-year-old parturient with history of progressive bilateral lower extremity motor and sensory deficit at 29 weeks of pregnancy. A spinal cord lesion at L3 level was suspected with neurology consultation; and MRI of the lumbar spine was recommended. However, patient declined MRI due to history of severe anxiety. Her symptoms self resolved during a course of 2 weeks. She was admitted to the labor and delivery suite at 38 week in active labor with 3-4 cm cervical dilatation, requesting epidural labor analgesia. Upon anesthesia consultation, neuraxial labor analgesia was determined to be inappropriate for her without definitive study of her lumbar spine. Alternative intravenous (IV) analgesia was offered to the patient and accepted. After fetal scalp electrode placement for continuous fetal heart monitoring and a loading dose of 0.4 mcg/kg, dexmedetomidine continuous infusion was administered at 0.2 mcg/kg/h. In addition, IV on-demand remifentanil bolus doses were started at 10 mcg and titrated to 40 mcg gradually, after confirmation of fetal and maternal well being. The dosing interval was started at every 5 min and titrated to every 1.5 min when the cervix was fully dilated. Continuous pulse oximetry and end tidal carbon dioxide were monitored throughout the process. Significant improvement of analgesia was observed with mild level of sedation. A healthy baby boy was delivered vaginally 73 min after the initiation of IV analgesia, with APGAR scores of 8 and 9 at 1 min and 5 min postpartum. A total of 660 mcg remifentanil was utilized.

Discussion: The rapid onset and ultra short half life have made remifentanil suitable for treating the cyclic nature of labor pain. However, previous study of remifentanil demonstrated reduced labor analgesic efficacy after 60 minutes. While acute tolerance could be the explanation, on-demand adjustment of bolus dosage and lockout interval may be useful. Our maximum on-demand dose of remifentanil every 1.5 minutes was similar to the “optimal dosing” of 0.5 mcg/kg with 2-min lockout setting suggested by previous studies. Such relatively frequent and large dosing of remifentanil requires close maternal and fetal monitoring. Adjunct such as dexmedetomidine with significant analgesic and sympatholytic properties may play an important role in attenuating labor anxiety/pain and preventing opiate-induced muscle rigidity and respiratory depression. In conclusion, alternative IV analgesia combinations of dexmedetomidine and remifentanil may be an efficacious and safe option to parturient. However, routine clinical application of such practice may be still limited by nursing, administrative and technical protocols of individual institution.

References:
6. Reynolds F, IOA 2011; 20:38-50