Dexmedetomidine and Remifentanil for Fetoscopic Surgery

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A 21 year old G5P2A2 female at 19 weeks gestational age referred for a history of Rh sensitization and a positive antibody screen of 1:1024 for anti-D and 1:1 for anti-C. She had two normal deliveries for which she received Rhogam, but in 2008 she had an intrauterine demise at 18 weeks and D & C but received no Rhogam. In May 2009 at 24 weeks gestation she was diagnosed as having a fetus with anemia. She had an intrauterine transfusion at another hospital under MAC with extreme anxiety, excitation and movement which led to increased sedation, respiratory arrest, intubation and a general anesthetic. She was suing the other hospital because of fetal demise and we were unable to get her medical records. Her past medical history included a grand mal seizure disorder treated with Keppra 500mg BID and hypothyroidism treated with Synthroid 75mcg QD. Our normal anesthetic for fetoscopic surgery at that time was remifentanil for analgesia and fetal immobility with propofol and diazepam for maternal sedation. Fearing these were the medications she received at the other hospital, we replaced our normal sedatives with Dexmedetomidine 0.4-0.6 mcg/kg/min without a loading dose for sedation in addition to the remifentanil. The procedure was well-tolerated and was repeated five times throughout the pregnancy culminating in the delivery of a healthy baby. The fetus and mother suffered no bradycardias and after the second transfusion the mother was no longer anxious and enjoyed watching the procedure. Dexmedetomidine appears to be a safe and effective medication for the sedation of the mother for fetoscopic surgery without causing bradycardias in the fetus.

This case allowed us to study an extremely anxious patient for multiple fetoscopic surgical procedures of variable duration, at different gestational ages and different degrees of fetal stress. They were done at fetal ages of 18 weeks (w), 18w 3days (d), 23w-3d, 27w 1d and 34w with corresponding durations of 42, 43, 55, 55, and 44 minutes. There were no fetal bradycardias and the mother remained calm, cooperative (although she was uncomfortable at times) and did not move. The advantage of dexmedetomidine with remifentanil is that with moderate sedation we had a cooperative patient who in the past could not cooperate with deep sedation. Dexmedetomidine produced a unique “cooperative awareness” in this patient while the remifentanil produced analgesia and immobility in the fetus. Dexmedetomidine is an alpha 2 agonist and has no action on gamma receptors which have been implicated in apoptosis and agitation. The patient was cooperative and able to observe the procedure and remembered seeing her fetus.

As more and more case reports are published and clinical data accumulates, randomized-controlled trials should be considered regarding the safety and efficacy of the use of dexmedetomidine in carefully selected patients in which the potential benefits outweigh the potential risks.