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Neonatal Baclofen Withdrawal: A Case Report of an Infant Presenting With Severe Feeding Difficulties

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Background

Baclofen is a gamma-aminobutyric acid (GABA) agonist used as a skeletal muscle relaxant for the treatment of spasticity resulting from neuromuscular disorders or traumatic injury to the spinal cord. Abrupt discontinuation of intrathecal baclofen has been reported to cause a neuroleptic-malignant-like syndrome with symptoms such as altered mental status, increased muscle tone, dysautonomia, and fever in adults (Coffey et al., 2002). There has been some published literature documenting seizure activity related to baclofen withdrawal in adults (Hyser & Drake, 1984; Kofler & Lewis, 1992; Terrence & Formm, 1981). However, there is limited information regarding the effects of intrauterine baclofen exposure on neonates. To our knowledge, there are only three published reports on this topic. One case report described seizures developing on the seventh day of life in an infant with intrauterine baclofen exposure (Ratnayaka, Dhaliwal, & Watkin, 2001). Another case report described a premature infant, born at 33 2/7 weeks gestation, who developed a high-pitched cry, tremor, hypertonicity, excessive sucking, disordered sleep, hyperthermia and mottling which were attributed to withdrawal from maternal baclofen (Duncan & Devlin, 2013). Finally, Moran, L.R et al. described an approach to an infant exposed prenatally to a low dose of baclofen (10 mg orally twice daily), clonazepam and controlled-release oxycodone. In this case the infant was prophylactically treated with baclofen within the first hours of life before symptoms of withdrawal were present. On the second day of life the infant developed symptoms of withdrawal that resolved with phenobarbital therapy. It is unclear if the withdrawal symptoms in this case were due to maternal opiate use during pregnancy or the low dose of baclofen the mother had been prescribed (Moran, Almeida, Worden, & Huttner, 2004). Our case report describes a full term infant who had been exposed prenatally to baclofen and presented at 12 hours of life with severe feeding difficulties as the primary symptom of baclofen withdrawal.

Although rare, withdrawal from baclofen is a potentially dangerous condition that requires vigilance and cooperation from all members of the interdisciplinary team to ensure favorable outcomes for affected newborns and their families.

Case Report

A female infant, D.W. was born at 39 1/7 weeks gestation via scheduled cesarean section to a 35 year old G2 P1001 mother. The mother's past medical history was significant for neurocysticercosis, status post removal of a spinal lesion resulting in paraplegia. Her pregnancy was complicated by advanced maternal age, anxiety and depression. Maternal medications included: low molecular weight heparin, baclofen (40 mg orally four times daily), gabapentin, nitrofurantoin, trazodone and tizanidine. The birth history was notable for the presence of a nuchal cord and the Apgar scores were 8 and 9 at 1 and 5 minutes of life respectively. D.W. was admitted to the newborn nursery and roomed in with her mother per unit protocol. On initial physical exam she was observed to be alert, non-dysmorphic and large for gestational age (birth weight of 4.233 kg). Cranial molding was present and a dermal melanosis was noted on the

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sacral area. The remainder of the physical exam was unremarkable. Blood glucose levels were monitored during the first 24 hours of life due to the infant being large for gestational age and all values were within normal limits. At approximately 12 hours of life, parents and nursing staff became concerned because D.W. was not feeding well. She was exclusively formula feeding and although her parents and nurses reported that she had fed well immediately after birth, by 12 hours of life she began gagging when the nipple was introduced, showed no interest in sucking and would take no more than 3–5 mL per feeding. She had not had any emesis and was voiding and stooling appropriately. Another blood glucose level was checked at that time as the infant had not fed in over 8 hours and the result was normal. The physical exam was unchanged and neurologic exam appeared to be appropriate except for the infant demonstrating unwillingness to suck. As the day progressed, D.W.'s oral intake continued to decline as she was unable to take more than 2–3 ml per feed despite extensive nursing intervention. Several interventions were attempted including attempting different feeding positions, providing jaw support and a Haberman feeding nipple without success. A speech pathology consultation was ordered, however a therapist was not available due to weekend staffing. In the absence of a speech pathologist, lactation consultation was requested to assist with feeding techniques. The following day, postnatal day 2, D.W.'s nurses continued to express concern that she was very difficult to feed, not showing hunger cues and was still unable to suck appropriately from a bottle. Feeding via spoon, cup, syringe and Haberman all continued to be unsuccessful. Each feed was reportedly taking 30–45 minutes and required intensive manipulation by the registered nurse. In addition, by approximately 36–48 hours of life D.W. developed loose green stools and mild tremors. Evaluation for drug withdrawal was performed using a modified Finnegan scoring system (Appendix) and her initial score was 17, followed by a repeat score of 10 after feeding and swaddling. Two hours later the weaning score was repeated with a score of 15 prompting transfer to the neonatal intensive care unit (NICU) for further evaluation and management.

After transfer to the NICU D.W. continued to exhibit clinical signs and symptoms of withdrawal including hypertonicity, tremors, hyperactive Moro reflex, sneezing, loose stools and a disorganized sucking pattern. A basic metabolic panel obtained shortly after transfer was unremarkable without evidence of electrolyte imbalance. A meconium drug screen was collected and found to be negative for drugs of abuse. Images from a head ultrasound that was performed on the day of transfer were also reviewed and were notable for small choroid plexus cysts with minimally increased echogenicity in the area of the caudothalamic grooves bilaterally. However, neither finding was believed to be clinically significant. Given her intrauterine exposure to a multitude of maternal medications, a pediatric pharmacist was consulted for recommendations regarding the appropriate pharmacologic management. The decision was made to initiate oral baclofen at a dose of 0.05 mg/kg/dose four times daily. A minimum feeding volume of 70 mL/kg/d (35 mL every 3 hours) to be provided by mouth or via gavage was instituted to ensure adequate hydration and provide a minimal caloric intake.

Within 24 hours of initiating baclofen, D.W.'s modified Finnegan scores had declined and were 7 to 10. Forty eight hours into therapy her symptoms continued to improve and her oral intake had increased significantly as she began taking up to 50 mL of formula per feeding. By the third day of baclofen therapy, D.W.'s withdrawal symptoms proved to be well under control as her Finnegan scores were as low as 2 and no greater than 7. In that time her interested in bottle feeding and quality of suck continued to improve such that she no longer required gavage feedings to supplement her oral intake and, in fact, began to demonstrate gradual weight gain. Once her withdrawal symptoms had been appropriately managed discharge planning began. This included contacting the family's pediatrician who agreed to oversee D.W.'s care as the baclofen was being weaned as well as identification of an outpatient pharmacy in the community capable of compounding and dispensing baclofen. D.W.'s nurses provided extensive family teaching to ensure they could accurately and proficiently draw up, measure, and administer the prescribed dosage. In addition, the family was taught to be able to identify signs and symptoms of withdrawal as the baclofen dosage was being tapered.

D.W. was ultimately discharged home on postnatal day 10 after having been treated with baclofen for 7 days. At the time of discharge she remained on the initial prescribed dose of 0.05 mg/kg four times daily. Her neurologic exam, however, had completely normalized and she no longer exhibited any clinical signs of withdrawal. Further, her feeding volumes had increased vastly and were as much as 60 to 90 mL every 3 or 4 hours. Upon discharge recommendations for weaning the baclofen were provided which included continuing the discharge dose for an additional 7 days and then decreasing the total daily dose by 25% every 3 to 4 days by lengthening the dosing interval before ultimately discontinuing the medication. To our knowledge tapering of the baclofen was carried out successfully and without complication.

Discussion

Baclofen withdrawal is a fairly well documented and possibly life threatening phenomenon in adults. However, because it is rarely prescribed for use in pregnant women the safety of intrauterine baclofen exposure and the effects of abrupt postnatal cessation on the neonate are largely unknown. To date there have been only a handful of case reports documenting the clinical manifestations of baclofen withdrawal in the newborn with reported symptoms ranging from hypertonicity and irritability to intractable seizures responsive only to initiation of baclofen. In the preceding case, a term female infant who had been exposed prenatally to baclofen presented at 12 hours of life with difficulty feeding that progressed to more fulminant signs of withdrawal by 36 hours of life. Fortunately, she quickly responded to the initiation of baclofen and within 72 hours of drug therapy most of her symptoms had resolved. Although rare, withdrawal from baclofen is a potentially dangerous condition that requires vigilance and cooperation from all members of the interdisciplinary team to ensure favorable