Understanding Neonatal Abstinence Syndrome:

Literature Review

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Did you ever think that a newborn baby could be a drug addict before entering the world? You'd be surprised. Throughout my three years of experience in the Neonatal ICU, I have explored many different problems associated with a child's birthing. Among the various issues that can stem from pregnancy, the most intriguing topic is Neonatal Abstinence Syndrome (Abbreviated, NAS). NAS occurs when a mother actively uses opioids during her pregnancy. This drug use, in turn, affects the child's Central Nervous System negatively. NAS is very likely to cause respiratory complications, gastrointestinal problems, and many more issues (Patrick et al., 2015). A massive result of the NAS cases is 15 to 45-year-old mothers on Medicaid who have a long-term prescription for a type of opioid medication during the pregnancy (Kraft et al., 2016). Based on a literature review, nonpharmacological treatment is the best approach for NAS infants.

An initiative to improve the quality of care of infants with neonatal abstinence syndrome

Neonatal Abstinence Syndrome is a drug withdrawal syndrome associated with neurologic, gastrointestinal, and musculoskeletal disturbances that usually set in 48 to 72 hours after birth (Grossman et al., 2017). The diagnosis is the direct result of in utero exposure to opioids. Due to the national crisis of the opioid epidemic, the incidence and prevalence of NAS are increasing.

The rise of NAS in 12 years led to an approximate 400% increase from 1.2 cases per 1,000 hospital births in 2000 to 5.8 points in 2012 (Centers for Disease Control and Prevention [CDC], 2017). Neonatal Abstinence Syndrome has become a recognized public health burden as treatment often includes an extended hospitalization and admission to a Neonatal Intensive Care

Unit (NICUs) for the newborn. A study found that more than 80% of infants with NAS participate in Medicaid programs, which accounts for the majority of the estimated $1.5 billion in total hospital charges for the syndrome. (Patrick et al., 2015).

Pharmacologic treatment helps to subside the symptoms of withdrawal; however, the drugs used are not benign. If staff is unsuccessful with nonpharmacologic methods, then morphine is initiated or increased (Grossman et al., 2017). Some nonpharmacologic interventions include a low-stimulation environment, engaged caregivers or volunteers to help eat, sleep, and console. Using these techniques before administering morphine decreases the signs of withdrawal and length of stay (Grossman et al., 2017) significantly. The most effective interventions were the implication of standard protocol treatment.

Due to the lack of individual rooms, infants with NAS end up with a transfer to the NICU, an environment that is often bright and noisy. The neonate initiates a regime of assessment and feeding, unlike the demand feeding schedule a newborn would experience in the mother/baby care. The national average length of stay for the infant experiencing withdrawal is 23 days.

However, the most recent evidence (Grossman et al., 2017) suggests a more robust emphasis and standardization of unmedicated interventions. Including rooming-in and promoting breastfeeding can impressively reduce the length of stay and the need for pharmacologic treatment for infants with NAS.

Key Points

One of the most significant implications of lowering neonate withdrawal symptoms from methadone is the parents' involvement. Engaged caregivers who tend to their infants' cry activate

the most acute treatment: comfort (Grossman et al., 2017). Providing prenatal counseling before the arrival of an infant with NAS is critical to preparing the parents for their hospitalization stay, which may differ from what they have experienced or envisioned. During this counseling, the outpatient care coordinator will offer handouts on what to expect and answer questions (Grossman et al., 2017). Preparing the parents of their critical role in treatment allowed our success in initiating intensive nonpharmacological interventions for all methadone-exposed infants from birth and before (Grossman et al., 2017).

Another strong point in this study was altering treatment with opioids based on FNASS scores that validation has not received (Grossman et al., 2017). To obtain an FNASS, you must disturb and unswaddle the infant, which likely increases the score. Many categories that are score include tremors, tone, and cry. Our goal for an infant withdrawing is to feed well, sleep well, and be comforted (Grossman et al., 2017). Meeting these goals then suggests treatment was successful, and there is no need to score the infant using the FNASS scale (Grossman et al., 2017). The traditional Finnegan Neonatal Abstinence Scoring System (FNASS) assess the infant with NAS which may lead to treatment with opioids (Grossman et al., 2018). Infants were managed with eat, sleep, console (ESC) approach to decrease the use of morphine which is highly used in the FNASS approach (Grossman et al., 2018). The ESC approach limits pharmacologic treatment that can lead to substantial longer stays.

Assumptions

A length of stay requiring the use of pharmacologic interventions consisted of an average of twenty-three days. An infant with neonate abstinence syndrome (NAS) stayed seventeen days. During this study, they changed the treatment and evaluation methods to decrease inpatient days

by 5.9 days (Grossman et al., 2017). That is an estimated saving of $1.52 million in total hospital costs; this could substantially save the nation (Grossman et al., 2017). The local and state governments could benefit from targeting these geographic areas of concern with opioid (Patrick et al., 2015). Using these nonpharmacological interventions increased breast milk given during most feedings by 25% (Grossman et al., 2017). The drastic drop in NICU admissions went from 100% to 20%. These stats far exceeded the expectations of the decrease in length of stay for infants with NAS (Grossman et al., 2017). During this study, supporting the well-being of the infants with NAS using nonpharmacologic interventions helped dramatically lower the length of stays (Grossman et al., 2017).

Deficit/Conclusion

Did you know that in 2012 the total number of opioid pain reliever prescriptions sat at 259 million, enough for every American to have one bottle (Patrick et al., 2015)? Considering the impact that this study has on NAS infants, the study's conclusion, Grossman et al. (2017) proved that the length of stay for NAS infants could decrease. This result was brought upon by using nonpharmacologic interventions versus pharmacologic therapies. Using the rooming-in method involves the caregiver how to adapt and console to their NAS infant. The FNASS score was terminated and later substituted for the "eat, sleep, and console" method (Grossman et al., 2017). The hospitalization length for an infant with NAS was lessened by much more than the anticipated 50% goal by implementing the methods mentioned (Grossman et al. 2017).

Association of rooming-in with outcomes for neonatal abstinence syndrome

Both pharmacologic and non-pharmacologic interventions vary widely based on assessing the severity of symptoms using a withdrawal assessment tool. The widely used, yet never validated, Finnegan Neonatal Abstinence Scoring System (FNASS) requires the infant to be

frequently assessed and scored for a set of clinical signs. Approximately 95% of institutions use the FNASS scoring scale despite never being validated (Grossman et al., 2018). Despite the improvement of the use of the FNASS through education and the adoption of stringent weaning protocols, rooming-in is even more effective in improving NAS outcomes. Rooming-in consists of keeping mothers and babies together in a private room to allow parents to provide all of the care for their infant and allow for a truly low stimulation environment for the infants with NAS.

MacMillan et al. (2018) conducted a systematic review and meta-analysis of rooming-in and NAS outcomes. They found that opioid-exposed newborns rooming-in with their mother or other family members appear to be significantly less likely to be treated with pharmacotherapy and to experience substantial reductions in length of stay compared to those cared for in NICUs.

Holmes et al. (2016) found that the rooming-in program, combined with a modified FNASS approach, helped decrease the length of stay. Scoring infants only during skin-to-skin care, prenatal family education, and during physician scoring standardization. It also led to reduced pharmacologic treatment, length of visit, hospital costs with no adverse events, and a stable readmission rate (Holmes et al., 2106).

Grossman et al. (2017) implemented the use of a new assessment approach, an empowering message to parents, standardized non-pharmacologic care, and transferred infants directly to the inpatient unit to demonstrate a reduced length of stay from 22.4 days to 5.9 days, decreased costs, and no readmissions. This study, a quality improvement initiative, consisted of multiple Plan-Do-Study-Act (PDSA) cycles and demonstrated the most significant reduction in length of stay.

The primary plausible mechanism for rooming-in efficiency is the increased skin-to-skin contact, swaddling, soothing, breastfeeding support, all because of greater parent involvement (MacMillan et al., 2018).

Key Points

Does rooming-in with caregivers reduce the use of pharmacologic therapies, length of stay, and costs in treating NAS infants (MacMillan et al., 2018)? Rooming-in connects with a reduction in methadone treatment resulting in a shorter stay according to the systemic review and meta-analysis. The preferred inpatient care for opioid-exposed infants with NAS should be the rooming-in model (MacMillan et al., 2018). With the rise of NAS neonates, this puts a strain on the perinatal care systems. Following the rooming-in model would reduce the length of stay and cost. Just a few ways that soothe NAS infants are skin-to-skin contact with a caregiver and on-demand feeds. Rooming-In also increases the parent's involvement during this stressful time (Holmes et al., 2016). Recognizing the signs and symptoms of newborn opioid withdrawal can include but are not limited to increased muscle tone, tremors, sweating, vomiting, and diarrhea(MacMillan et al., 2018).

Assumptions

The thesis states that all other medical facilities treat NAS with pharmacologic therapy. Previously neonatal intensive care units (NICUs) provide the infant with specialized care and score the infant using the Finnegan system. More recently, it is more beneficial for the neonate to be present with the parent and have the caregiver participate in cares, instead of using methadone, which weans the baby from intrauterine to life outside the womb (MacMillan et al., 2018). By reducing the use of pharmacotherapy, the cost and duration of hospitalization are

decreasing significantly. Now, this only works if the parents are clean after delivery and want to be active in the infant's recovering process. During rooming-in, the infant and mother are together 24 hours a day unless separation is necessary for a medical or safety intervention (MacMillan et al., 2018). While using the rooming-in care model, fewer NICU stays were needed, decreasing the infant's overall visit (Holmes et al., 2016).

Deficit/Conclusion

According to the study, opioid exposed newborns rooming-in with caregivers appear to be much less likely to receive pharmacotherapy (MacMillan et al., 2018). Upon the study's conclusion, rooming-in programs significantly lowered the length of stay for NAS infants. The family satisfaction rate is affected positively by reducing hospitalization expenses, which are affected by the shortened length of stay (MacMillan et al., 2018). In the end, the forming of NAS was essential because it facilitated good communication and disseminated vital treatment information among all clinical staff (Asti et al., 2015).

Neonatal abstinence syndrome

Breastfeeding is best supported when the mother and baby can remain together (Demirci et al., 2015). However, this can be challenging in the NICU environment. The stigma of maternal guilt can often interfere with bonding to the infant in high acuity levels of care (MacMillan et al., 2018). The literature supports the use of breastmilk and breastfeeding for the infant diagnosed with NAS whose mother is in a treatment program in reducing both pharmacologic treatment and reduction in length of stay. In the absence of maternal drug use and other contraindications, both the American Congress of Obstetrics and Gynecology (ACOG) and the American Academy of Pediatrics (AAP) encourages breastfeeding for those in treatment programs (Kraft et al., 2016).

By implementing a rooming-in program, Grossman et al. (2017) demonstrated an increase in breast milk feeding rates. In another retrospective cohort study by Short, Gannon, and Abatemarco (2016), the length of stay of breastfed groups was significantly shorter. Breastmilk is more beneficial for infants, and breastfeeding promotes bonding between mother and baby, which is vital for treating the infant experiencing withdrawal (Demirci et al., 2015). The main concern of mothers who have a withdrawing infant is the impaired maternal bonding that can result from opioid use (Kraft et al., 2016). Staff mustn't past judgment as these mothers are already sensitive and pose enough guilt on themselves. During treatment, staff should encourage breastfeeding to create a stronger bond (Kraft et al., 2016).

Key Points

A dramatic increase in opioid use has affected pregnancy in the past decade (Kraft et al., 2016). Since we have seen the opioid epidemic, there has been an increase in NICU admissions. Other factors aside from opioid medications can result in worse NAS outcomes. We know that substance abuse used during pregnancy has a significant impact on the fetus. Improving compliance with prenatal care could reduce the high withdrawal rates (Kraft et al., 2016). In utero, exposure typically requires a 60-80% risk of needing pharmacology treatment to minimize NAS's effects (Kraft et al., 2016). NAS's defining features are excessive crying, poor sleep, hyperthermia, yawning, stuffiness, and sneezing. Finnegan's traditional scoring system is to monitor infants for NAS (Kraft et al., 2016). Treatment is optimized when staff engages the mothers to introduce skin-to-skin holding, encourage breastfeeding, and create a soothing environment to manage NAS non-pharmacologically (Kraft et al., 2016). Rooming-In may strongly reduce the need for pharmacologic treatment. Additionally, the therapeutic benefit is

physical touch and bonding (Kraft et al., 2016). Breastfeeding can prolong substance-free periods in women who use methadone (Demirci et al., 2015).

Assumptions

Rooming-in should be the first treatment for NAS infants (Kraft et al., 2016). Creating a low stimulation environment is vital for this to work right. High-calorie feeds help minimize hunger and promote growth (Kraft et al., 2016). Breastfeeding has decreased the incidence and severity of NAS. Physicians who care for a mother who has prior exposure to methadone should be up to date on the benefits of breastfeeding to this population as well as therapeutic communication (Demirci et al., 2015). Optimal NAS care begins with continuing education for the staff to provide standard gold care (Kraft et al., 2016).

Deficit/Conclusion

With the significant impact, opioid medications have affected pregnancy. We must find a treatment option that best suits the infant. After the study, the details of the NAS opioid withdrawal and the variables that determine the severity are still not entirely known (Kraft et al., 2016). With these negative factors in mind, however, some positive interventions have surfaced from the study. In conclusion, the study also found that there were benefits in breastfeeding, resulting in shorter hospital stays for NAS infants (Short et al., 2016).

Conclusion

While NAS is still a very prevalent condition, there are proven ways to improve its outcome. In one study, NAS-affected-newborns rooming-in with the mother or other family members are exponentially less likely to be treated with pharmacotherapy. Also, there are substantial reductions in length of stay compared to the affected infants cared for in the NICUs

(MacMillan et al., 2018). Also, breastfeeding could potentially have additional benefits for women taking methadone and their infants. The study's conclusion includes but is not limited to: decreased occurrence or severity of NAS and improved family or social function. This occurs through stress reduction, increased confidence in the mother, and an empowered mother-to-baby bond (Demirci et al.,2015). While the opioid epidemic rages on, we have to learn how to manage NAS in ways besides morphine-weaning. As more studies take place, the caregivers will be more informed and improve the condition as best as possible.

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