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NEEDS OF A CHILD WITH NEONATAL ABSTINENCE SYNDROME

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Abstract

Neonatal Abstinence Syndrome (NAS) is defined as a generalized, multi-system group of symptoms resulting from the sudden discontinuation of fetal exposure to substances used by the mother during pregnancy. Symptoms of NAS are most dominant in the central nervous system and respiratory system of the infant. The aim of this work is to explore what the needs of infants with NAS are. Empirical data were collected by means of a qualitative research method, using case studies. The information was gathered during observation, conversation with medical staff and analysis of infants' health documentation. The sample selection process was deliberate, choosing three infants diagnosed with NAS. Based on the analysis of the data we identified the need to reconsider the local standard of nursing care of infants with NAS.

Key words: Infant, Neonatal Abstinence Syndrome, NAS; Finnegan Neonatal Abstinence Scoring System, FNASS

Introduction

The use of addictive substances is currently increasingly common among pregnant women. Many of them do not realize that the abuse affects their prenatal child. Up to 75% of these children have symptoms of NAS after birth. Therefore, it has been recommended that the following nursing interventions are implemented in order to meet the needs of infants [1]:

- specification of infant's and mother's anamnesis;
- observation and evaluation of the infant's health, based on the valid score system;
- administration of pharmacological treatment and subsequent gradual withdrawal;
- sampling of biological material for laboratory tests;
- regular evaluation and re-evaluation of NAS symptoms; if severe, avoid the complications;
- communication with a social worker if necessary;
- education of parents or caregivers.

Recommended intervention should ensure safe and effective medical care to avoid complications in the respiratory, nervous, cardiovascular and excretory systems of the infant. It should also ensure the maintenance of adequate nutrition, and that a bond with the parents is sustained.

Aim

To identify the needs of infants with NAS, to process the case studies and to analyze individual needs.

Methodology

Empirical data was collected by means of observation, conversation with medical staff and analysis of the infants' health documentation. We used qualitative analysis to process the information, which served as a basis for the casuistics, and we created a coding system within the framework of qualitative analysis. The Finnegan Neonatal Abstinence Scoring System (FNASS) captures two fundamental needs of infants: biological needs (breathing, activity, sleep, nutrition, excretion), and psychosocial needs.

Sampling

Three infants diagnosed with NAS (two infants who had health care provided in local hospitals, and one infant in a perinatology centre).

Case reports

Casuistics no. 1

18-year-old woman, primipara, smoker, gravidity without complications. Her urine was positive for amphetamines and methamphetamines at the time of child-birth. In the 37th gestational week she spontaneously delivered a boy, weight 3,095 g, length 49 cm. The infant was troubled with mucus and phlegm that was being removed repeatedly. The skin was cyanotic, SpO₂ (peripheral capillary oxygen saturation) – 60%. The infant was resuscitated with Neopuff, cyanosis went within 15 minutes and the baby started to cry. Subsequently, the child was placed in an incubator (36°C) on an apnea pad and was prescribed oxygen therapy using oxygen glasses: FiO₂ (fraction of inspired oxygen) – 0.60%–0.30% (over 3 days). The Apgar score for the child was 7/8/10.

The child had been restless and tearful since delivery. Six hours after delivery, the child experienced apnea pauses that lasted approximately 4–6 seconds: SpO₂ 60%, respiratory 76/min, pulse 158/min, body temperature 37.6°C. The child began to sweat, was restless, tearful, had a squeaky, high-pitched cry, was hypertonic and had irregular limb movements. The child responded to each manipulation with increased muscle tone, irritation, crying and increased suction.

The child's clinical condition was evaluated by FNASS with a score of 11 points, and the child was prescribed Luminal 0.07 ml. I.V. every 12 hours (2 days). The apnea paused, and the restlessness and high-pitched crying retreated on the fourth day. Vital functions were stabilized at P 132/min, R 54/min, SpO₂ 98%, T 36.8°C.

The child's health condition was evaluated and assessed once during the day and once at night using the FNASS (highest score 11 and lowest score 5) during the first four days. The child was moved from the incubator to a cot with an apnea pad on the sixth day.

As part of the nursing care, a strict regime was initiated, and all department operations were subsequently adapted. The child was protected from excessive manipulation or stimulation (noise, strong light), and a gentle treatment was implemented with minimal handling.

When restless and crying, the child was soothed with a pacifier and fed with Beba HA milk, initially injected through the pacifier. Later the baby drank milk from a 35 ml bottle every 2.5 hours and did not vomit. The child increased its body weight to 3,284 g. Despite the interventions, the child slept continuously only for a maximum of one hour. Child's diuresis was normal; urine was drug-negative on the eighth day. The faeces were sparse and yellow in colour.

The mother was informed about the condition of the child and the care she is supposed to take over her child but she was worried that handling the baby might hurt him. On the third day after delivery the mother signed an AMA (against medical advice) form and was discharged from the hospital. The child

was released into home care 12 days after the birth accompanied by the mother and grandmother.

Casuistics no. 2

30 years old, third pregnancy, smoker, admitted to the delivery room under the influence of alcohol 1,24‰. In the 40th gestational week she spontaneously delivered a boy whose birth weight was 2,800 g, length 47 cm. After the delivery the infant was groaning and its muscle tonus was slightly reduced. The Apgar score was 7/9/10, R 62/min, P 146/min, T 36,5°C, SpO₂ 78%. After a health evaluation, the child was placed in an incubator on an apnea pad and was prescribed oxygen therapy using oxygen glasses: FiO₂ (fraction of inspired oxygen) – 0.60%–0.30%.

On the second day after delivery, the infant had increased muscle tone and was experiencing excessive sweating, sneezing and high, squeaky crying. Limb tremors were also observed, especially during manipulation and stimuli: R 76/min, P 150/min, SpO₂ 77%, T 37,5°C. The clinical condition of the baby was assessed once a day according to FNASS (highest score 10, lowest score 3). On the fourth day after delivery, symptoms subsided and the infant was moved from the incubator to a cot with an apnea pad and a neobed.

As part of the nursing care, a strict regime was initiated to which all department operations were adapted. The child was protected from excessive manipulation, stimulation (noise, strong light), and a gentle treatment was implemented with minimal handling.

All activities relating to care of the infant were planned in advance. The child was soothed by a pacifier and fed with female milk. The infant was drinking with pauses and vomiting after feeding. It was then placed in an elevated position on its side. Gradually, milk doses were increased until the daily dose reached 145 ml/24h. Vomiting subsided. The child's body weight increased to 3,150 g. Despite the interventions, the child slept continuously only for a maximum of one hour. Urinary and faecal excretion was physiological.

The mother was with the child during the entire period of hospitalization. She was educated about the overall care of the child, which she understood. They were both discharged from the hospital after 16 days.

Casuistics no. 3

21 years old, had suffered from varicella during pregnancy, and was hospitalized at the gynaecology department for preterm Premature Rupture of Membrane (pPROM), where she tested positive for amphetamine abuse in the 26th gestational week. She was discharged from hospital after she applied for AMA termination of hospitalization. Since then she has not participated in any gynecological examinations. She was smoking throughout her pregnancy. At the time

of childbirth her urine was positive for amphetamines and methamphetamines. She gave birth in the 33rd gestational week to an infant with a birth weight of 1,980 g, length 43 cm. The delivery was spontaneous. After childbirth, the baby did not cry, was hypotonic, cyanotic with gasping and exhibited signs of stridor. Birth weight was 1,980 g, length 43 cm. Apgar score 6/7/8, SpO₂ 63%, R 42/min, P 158/min, T 36.2°C. After stabilization of the infant's condition, the infant was placed in an incubator, on an apnea pad, and connected to a non-invasive continuous ventilation support CPAP (continuous positive airway pressure) with FiO₂ oxygen therapy 0.40%.

Four hours after birth, the infant began to experience severe agitation, irritant reactions, squeaking crying, rapid breathing with retraction and apnea pauses. Luminal 0.05 ml I.V. was prescribed. Gradual significant worsening of the clinical condition was noted, including tachypnoea R 78/min, grunting, dyspnoea and apnea pauses of 5–7 seconds without a decrease in SpO₂. As a result of changes in the infant's clinical condition, the child was transferred to a specialized neonatal clinic. The transportation went without complications.

At the perinatology centre the child was placed in an incubator on an apnea pad, in a nesting position and connected to CPAP with FiO₂ oxygen therapy 0.60% – 0.35% for five days.

The child responded to each stimulus with restlessness, over-stressed high-pitched crying, limb tremor, and apneic pauses of 6–7 seconds without a decrease in SpO₂. The child slept continuously only for a maximum of one hour, often waking up. Minimal handling was performed in a quiet, dark environment. Nursing activities were always planned, and the following elements of basal stimulation were implemented: initial touch (caress of the right cheek), nest position, mummy and kangaroo.

Considering the overall health of the child, parenteral nutrition was 10% glucose on the first day. On the next day, the child was enterally given Nutrilon Nenatal, a starting dose of 5 ml was tolerated and the child did not vomit. Subsequently, 15ml/h of milk was given to the child using a probe. On the seventh day, mucus and blood appeared in the child's faeces. For this reason, enteral nutrition was changed to parenteral up to the 15th day of life, when the stool was again free of mucus and blood. On the fifteenth day the child was fed again in small doses with Nutrilon Nenatal milk at 5ml/h using a probe. Gradually, milk doses were increased to 15 ml/h. The child tolerated the milk without vomiting and diarrhoea and body weight increased to 2,640 g. Oral stimulation was performed to support and maintain the child's search, sucking and swallowing reflex. On the 19th day, the child was moved from the incubator to a cot with an apnea pad and a neobed.

The mother was educated about the overall care of the child but showed no interest in the child and left the hospital after 4 days. The child was transferred to the local hospital after 29 days of hospitalization.

Analysis of the casuistics

Respiration need

Respiration needs were met on a highly individual and professional basis, and there were no complications in the respiratory system during hospitalization. While satisfying the basic need of breathing, it is important to continuously monitor health status and professionally assess and evaluate the symptoms of NAS. Experts recommend using the FNASS scale, according to which the child's health is always evaluated between feeding, even if the child is crying. The overall score shows the severity of NAS and the need for pharmacological therapy. Drug treatment is usually indicated when a score above 8 is reached [2]. For child no. 2, FNASS score was 10 and no pharmacotherapy was initiated.

Movement and activity needs

Supporting measures such as a dark, calm environment, child positioning and minimal handling are used to satisfy the movement and activity needs of a child with NAS. Of great benefit in meeting the needs of the child is the implementation of basal stimulation elements in nursing care. This was realized only with child no. 3. The implementation of basal stimulation elements improves adaptation and supports the psychomotor development of the child. It is key to the physiological and behavioral functioning of newborns [1,3,4].

The need of sleep

Whilst ensuring the infants were given all proper care, environmental disturbances were minimized, providing a quiet, dark and thermoneutral environment with minimal sensory stimulation, a soft pad and minimal handling. The medical staff kept any handling of the child to a minimum and tried not to wake the sleeping child. Swaddling reduces a child's crying periods and promotes sustainable sleep [5], but it was not used in any of the monitored cases.

Nutrition need

NAS children have problems with poor suction, regurgitation and vomiting. Each of these symptoms were monitored and recorded in all three cases here. Interventions reduced the effects of stimuli from the environment during feeding, higher position and side position were provided to prevent aspiration and daily monitoring of the child's body weight was undertaken. The third child received oral stimulation as a basal stimulation. Children were provided with a non-nutritional sucking device (a pacifier to reduce excessive sucking and prevent vomiting), and given more frequent feeding at smaller doses [6]. Multiple studies have confirmed that breast milk contains only very small amounts of methadone and

buprenorphine. Based on these findings, breastfeeding should be encouraged for children with NAS as it helps to calm them down, and in some cases has helped to manage symptoms without pharmacological intervention [7]. Breastfeeding of children with NAS has also been shown to be beneficial in reducing NAS symptoms, overall length of hospitalization, and last but not least, in strengthening the emotional attachment of mother and child [8]. Breastfeeding is always indicated unless the mother is taking heavy street drugs, using multiple opiates at the same time, is infected with HIV or has hepatitis C [5]. The monitored children were not breastfed despite the recommendations.

Excretion need

Urination and excretion were monitored in all three cases. Nutrition was adjusted according to consistency changes in the stool. The nurse provided the child with parenteral therapy and increased skin care around the genitalia [2]. Because the symptoms of abstinence also include excessive sweating, it was ensured that the bed linen was clean and dry, as were as the baby's clothes.

Psychosocial need

During pregnancy, the child enters into the first social relationship with the mother and becomes a social being. The role of medical staff is to support the building and strengthening of the bond between the child and the parents. The mothers were not interested in their child in two out of the three monitored cases. It is important that the nurse should, as far as possible, substitute and satisfy the child's need for love [1].

Conclusion

In this paper, we have tried to emphasise the issue of care for children with NAS. We conclude that in order to manage each infant's individual symptoms successfully, local standards of nursing care need to be reviewed, and the evidence-based results of the research into the nursing of infants with NAS must be implemented. We identified a need to create centres that include a multidisciplinary team of gynecologists, pediatricians, midwives, nurses, psychologists, and social workers who will identify and educate future mothers from risk groups, as well as to prepare educational procedures for mothers/surrogate parents on aftercare for children with NAS using the e-health program and seminars. The focus and working with the issue is considered the first step towards a larger study dealing with NAS.

References

1. MacMullen N, Dulski L, Blobaum P. *Evidence-Based Interventions for Neonatal Abstinence Syndrome*. *Pediatric Nursing*. 2014; 40 (4): 165–167.
2. Drobná H. *Ošetrovateľská starostlivosť o novorodenca s abstinenčným syndrómom*. *Ošetrovateľský Obzor*. 2005; 2 (1): 15–16.
3. Boledovičová M, et al. *Pediatrické ošetrovateľstvo*. Osveta. Martin 2010: 68–70.
4. Friedlová K. *Bazální stimulace v základní ošetrovateľské péči*. Grada. Praha 2007: 61–62.
5. Kocherlakota P. Neonatal Abstinence Syndrome. *Pediatrics*. 2014;134 (2): e547–561. doi: 10.1542/peds.2013-3524.
6. Brucknerová I, et al. *Neonatológia pre poslucháčov lekárskej fakulty*. Univerzita Komenského v Bratislave. Bratislava 2017: 139–140.
7. Gomez-Pomar E, Finnegan L. *The Epidemic of Neonatal Abstinence Syndrome, Historical References of Its 'Origins, Assessment, and Management*. *Front Pediatr*. 2018; 6 (33): 1–8. doi: 10.3389/fped.2018.00033.
8. Hudak ML, Tan RC. *Neonatal Drug Withdrawal*. *Pediatrics*. 2012; 129 (2): e540–560. doi: 10.1542/peds.2011-3212.

Potrzeby dziecka z noworodkowym zespołem abstynencyjnym

Streszczenie

Zespół abstynencji noworodkowej (ang. *Neonatal Abstinence Syndrome*, NAS) definiuje się jako uogólnioną wielosystemową grupę objawów odstawiennych wynikających z nagłego przerwania ekspozycji płodu na substancje, które matka stosowała w czasie ciąży. Główne objawy dotyczą zwłaszcza ośrodkowego układu nerwowego i układu oddechowego niemowlęcia. Celem pracy jest zbadanie potrzeb niemowląt z NAS. Dane empiryczne zostały zebrane za pomocą jakościowej metody badawczej – studium przypadku, a informacje uzyskane podczas obserwacji, rozmowy z personelem medycznym i analizy dokumentacji zdrowotnej niemowląt. Dobór próby był celowy – troje niemowląt ze zdiagnozowanym NAS. Na podstawie analizy danych stwierdziliśmy potrzebę ponownego rozważenia lokalnych standardów opieki pielęgniarskiej nad niemowlętami z NAS.

Słowa kluczowe: niemowlę, noworodkowy zespół abstynencyjny, NAS, skala Finnegana oceny abstynencji noworodków, FNASS