

# Neonatal Abstinence Syndrome

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## ABSTRACT

Intrauterine exposure to drugs by mothers is not an uncommon finding in our society. Due to the mother's suppression of a medical history, the diagnosis of neonatal abstinence syndrome is often missed. We report a case of a term, female, newborn, who presented with the following features; e restlessness, inconsolable crying, along with sweating, vigorous sucking; and diarrhoea. No conclusion was derived from routine investigations. Eventually, with a high degree of suspicion regarding maternal drug addiction, her history was reviewed and it was discovered that the mother was a heroin addict. The baby was diagnosed as a case of Neonatal Abstinence Syndrome. The neonate was successfully managed thereafter and discharged.

## Key Words

*neonatal abstinence syndrome, neonate,*

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## INTRODUCTION

Neonatal Abstinence Syndrome (NAS) is a growing problem as the prevalence of drug abuse among women of the child-bearing age group is increasing over the years.<sup>1</sup> As a diagnosis, it is largely under-reported from South East Asia. This is due to the lack of disclosure of drug abuse, and also the symptoms are mostly non-specific, hence the diagnosis is often missed. A very high index of suspicion and focused history taking is required to identify such cases. We are reporting a case of NAS due to Heroin Withdrawal, which was timely diagnosed and successfully managed.

## CASE REPORT

A full term female newborn weighing 2.2 Kg was born by Normal Vaginal delivery in a Tertiary Care Medical Centre, with an Apgar score of 7, 8 at first and fifth minute of birth respectively. The mother was a 28 year old, unbooked case, Para 3 three with three living issues. Her HIV, VDRL and Hepatitis B status was tested after delivery and found to be negative. Parents were both street dwellers. The baby's birth weight was 2.25 kg (<10th percentile), length 46 cm (<10th percentile), and head circumference 33 cm (<25th percentile). The mother was malnourished and anaemic.

During initial questioning, no history was available regarding any form of addiction. At two hours of life, the baby developed fever and tachypnea and was admitted in the nursery. On admission, the patient's temperature was 38°C, respiratory rate 66/min, heart rate 142/min, capillary filling time less than 3 seconds (not prolonged), blood pressure 66/46 (mean 53) mm of Hg. Subsequently, the baby also developed an abnormal behaviour pattern, consisting of excessive high-pitched crying, irritability, inconsolability, sweating and diarrhoea. Baby had vigorous sucking and an exaggerated Moro's reflex. On the basis of these clinical features, a differential diagnosis of sepsis with meningitis, intracranial haemorrhage, hypocalcaemia, hypoglycaemia and thyrotoxicosis was entertained.

Investigations revealed a negative septic screen, CSF analysis, blood sugar and serum electrolytes were all within normal limits. Chest X-ray and ultrasound skull showed no abnormality and thyroid function test was also normal. This led to a diagnostic dilemma.

The history was reviewed again and it was discovered that the mother was a heroin addict for the past 5 five years. She had been taking the drug by inhalation, during conception, and throughout pregnancy. Taking into account the history, clinical presentation and a normal laboratory profile, the patient was diagnosed as a case of NAS due to

heroin withdrawal.

The patient was managed symptomatically and the Neonatal Abstinence Scoring System (NASS)<sup>2</sup> was meticulously followed. Within 24 hours of life of the baby, three consecutive NASS scores showed values greater than eight and phenobarbitone was started at 3mg/Kg/day (Fig.1). The maximum NASS score reached 12 on day 3 three of life and the dose of phenobarbitone was increased to 8mg/Kg/day, after which, symptoms gradually decreased and phenobarbitone was gradually tapered off and discontinued by day 10 of life. The baby was discharged after the mother was referred to rehabilitation and counselling centre.

## DISCUSSION

The incidence of drug-exposed newborns has been reported to vary from 3% to 50%, depending on the specific patient population, with urban centres tending to report higher rates.<sup>3</sup> Amongst drug-exposed newborns, the incidence of neonatal abstinence syndrome (NAS) ranges from 60-87%,<sup>4,5,6</sup> though a study from the U.K. reported an incidence of 21%. The major drugs of abuse can be classified into four groups. They are: (I) Opiates such as morphine, methadone, and heroin; (II) CNS stimulants such as amphetamines and cocaine; (III) CNS depressants like alcohol, barbiturates, benzodiazepines; (IV) and lastly Hallucinogens such as LSD.<sup>3</sup> The features of narcotic withdrawal have been summarized in Table 1.<sup>8</sup> The onset of withdrawal symptoms varies from 6 to 20 hours with diazepam, to 4 to 144 hours with heroin.<sup>9</sup> Similarly, the duration of neonatal abstinence syndrome (NAS) is variable for different drugs. Neonates who do not exhibit symptoms of drug withdrawal within the first three days of life are unlikely to present with NAS requiring treatment.<sup>6</sup> Diagnosing NAS can be made by screening tests in the meconium or urine of the newborn. Urine screening has a high false negative rate because only results for infants with recent exposure will test as positive. Meconium drug testing, although not conclusive if results are negative, is more accurate than urine sample in identifying infants of drug-using mother. Meconium analysis was found to have 96% sensitivity and 77% specificity.<sup>10</sup> The differential diagnosis includes central nervous system infections, metabolic disorders such as hypoglycaemia, hypocalcaemia, intracranial haemorrhage and thyrotoxicosis. The aim of managing babies who suffer from NAS is to have an non-irritable baby without vomiting or diarrhoea, who feeds well, sleeps well between feeds and is not heavily sedated. Currently it is stated that the administration of naloxone to an infant of a narcotic-addicted mother may result in abrupt drug withdrawal and seizures.<sup>2</sup> In the present case reported, the mother of the neonate was a heroin addict.

Heroin is an opioid and naloxone is a pure competitive opioid antagonist. So as a result, treatment with naloxone could precipitate immediate withdrawal symptoms and seizures. Management of such symptoms includes tight swaddling; rocking, avoidance of excessive light and sound; fluid and electrolyte maintenance, monitoring of the newborn's clinical condition by application of the (NAS) ; and lastly management of the social aspects. The NASS is based on vital parameters, sleeping patterns, the newborn's central nervous system, and the autonomic and gastrointestinal disturbances of the newborn. The most commonly used drugs for treatment of NAS is neonatal morphine solution (0.4mg/ml), a dose of which is titrated according to the newborn's NASS scores.<sup>9</sup> Other drugs are neonatal opium solution, paregoric, phenobarbitone, chlorpromazine, and diazepam. However, there is still little evidence regarding the efficacy of the different therapeutic regimes. It has been found that morphine-treated newborns require a significantly shorter duration of treatment versus those treated with phenobarbitone.<sup>5</sup>

Drugs of abuse that are contraindicated for use by mothers (who are already taking drugs) during breast-feeding include amphetamines, cocaine, heroin, marijuana, nicotine and phencyclidine. Drugs that should be used cautiously if a woman is breast-feeding include phenobarbital and benzodiazepines. Methadone is compatible with breast-feeding at a dose of less than 20mg every 24 hours. It has also been proven that drug exposure to an nursing infant can be minimised if the mother takes medication just after completing nursing or just before an anticipated lengthy sleep period.<sup>11</sup>

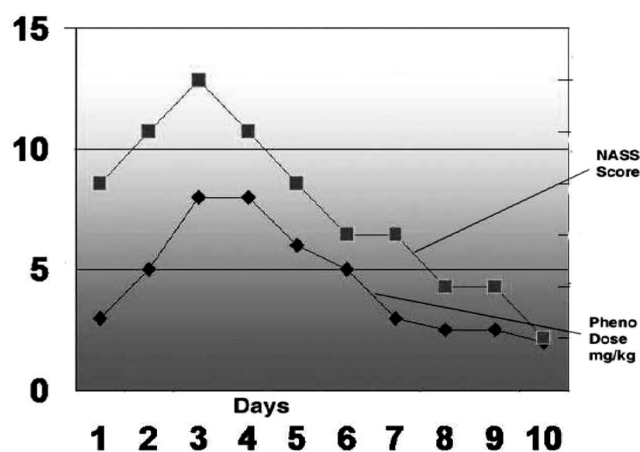


Figure 1. A graphical representation of the relationship between dose of phenobarbitone and NASS scores

There is limited information regarding the prognosis and long-term consequences of perinatal addiction. It is also difficult to attribute neurological deficits to drug effects or to environmental conditions due to overlap. Several studies have identified increased neurological abnormalities such as articulation disorders, weak visual, motor and perceptual skills, and disruptive and aggressive behavioural problems.<sup>11</sup>

## CONCLUSION

These children are at risk of child abuse and neglect. Identification of these high-risk infants and appropriate intervention is critical. Organizations, which can specifically look into the needs of these compromised mothers and their children, are in desperate need in Nepal.

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