

DISCUSSION

More babies born addicted to opiates: Could acupuncture help?

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Abstract

More babies are being born with neonatal abstinence syndrome (NAS), a condition caused by exposure to drugs (usually opioids) *in utero*. The incidence of NAS has increased significantly over the last 15 years thanks to the so-called “*opioid epidemic*”. The devastating effects of the epidemic have been widely reported in the USA but have also spread to the UK and other developed countries. Increased prescribing of opioid drugs since the 1990s has contributed significantly, and thousands of babies are now being born with NAS each year. Research suggests that acupuncture could help.

Keywords: acupuncture for neonatal abstinence syndrome, neonatal abstinence syndrome, paediatric acupuncture.

Introduction

According to figures from the National Institute on Drug Abuse, there were 32 000 cases of neonatal abstinence syndrome (NAS) in the USA in 2014, equivalent to one baby being born with NAS approximately every 15 s and resulting in costs of around \$563 million (National Institute on Drug Abuse 2019). A BBC investigation estimates the incidence of NAS in the UK to be one in 500 live births (BBC 2016).

NAS results in dysregulation of the central and autonomic nervous systems and the gastrointestinal system. Its symptoms include high pitched crying, poor feeding, decreased sleep duration and quality following feeding, increased muscle tone, tremors, seizures, sweating, increased respiration rate, yawning, sneezing, regurgitation/vomiting, and loose, watery stools (Logan 2013).

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Infants with NAS require hospitalization for an average 3.5 times longer than healthy babies (Corr 2017) and 30–80% require pharmaceutical intervention (Johnson 2003). There are two major issues faced by hospitals when treating infants with NAS. Firstly, the additional care that is required results in an estimated three-fold increase in costs (Logan 2013). Secondly, drugs are frequently prescribed off-label in the neonatal intensive care unit (NICU). Generally speaking, approximately 96% of babies in the NICU are exposed to off-label prescribing and almost 65% to unlicensed medications (Costa 2018). The situation is especially concerning when it comes to babies suffering from NAS who are routinely prescribed opioids such as morphine, methadone, and buprenorphine (Wachman 2019).

Research on acupuncture for neonatal abstinence syndrome

Research suggests that acupuncture could provide a safe, well-tolerated, and feasible

adjunctive treatment for NAS. Results include improved feeding and sleep, a reduced duration of morphine therapy and reduced length of hospital stay.

A retrospective chart review by Filippelli *et al.* (2012) demonstrates the potential benefits of non-insertive acupuncture (NIA) for NAS patients in an inner-city hospital in Boston, Massachusetts. The report includes information from 92 treatments administered to 54 patients with a gestational age of 33.2–42.1 weeks. Each infant received one to six NIA treatments and 73% of these were at a physician's request. The remainder of NIA treatments were requested by parents who saw another parent's child receiving treatment. NIA was administered using a finger or a *teishin* (a small metal rod which is used in some traditions to stimulate acupuncture points) to press the selected points for 5–10 s. The points used in the study were Baihui (Governor Vessel (GV) 20), Yintang (MHN 3), Hegu (Large Intestine (LI) 4), Neiguan (Pericardium (PC) 6), Zusanli (Stomach (ST) 36), Sanyinjiao (Spleen (SP) 6) and Yongquan (Kidney (KI) 1).

The results of the chart review indicated that restless babies became calmer during NIA, with a tendency to fall asleep either during or immediately after treatment. Improved feeding was also noted after NIA, and no adverse reactions were reported. The authors of the study conclude:

“In areas with a high prevalence of drug use, the availability of non-insertive acupuncture for the newborn population exposed to drugs in utero could enhance the care delivered to these patients long term. By recognizing the enriching capacity of non-insertive acupuncture for the newborn population with NAS, healthcare providers can continue to improve the specialized care these patients need.”

A pilot study on the safety, acceptability, and feasibility of auricular acupuncture for NAS, published by Weathers *et al.* (2015) had equally positive findings. The study was conducted at Jennifer Leigh Muma NICU in Tampa, Florida, a unit which admits approximately 70 NAS babies born at >37 weeks each year. The study assessed the effects of auricular acupuncture

on 20 babies with a median gestational age of 39 weeks.

Auricular acupuncture was administered at three to four of the following auricular points using SEIRIN® Pyonex 0.2 mm×0.6 mm single-use needles: Shenmen, sympathetic, lung, kidney, liver, frustration, R-point, psychovegetative rim. The points were selected according to each patient's active points and ear size. Following disinfection of the area, needles were inserted and secured with sterile micropore tape. Needles were retained for 3±1 days and then removed before repeating treatment on the opposite ear. Auricular acupuncture was continued until either methadone treatment was discontinued or a stable discharge dose established.

Safety and feasibility were assessed by the incidence of skin breakdown or cellulitis, needle displacements, adverse events and study retention rate. Feasibility for providers was assessed by recruitment and consent rate, ability to start treatment within two days of obtaining consent, number of completed documentation forms, and needle displacements (which were to be replaced within 3 days). Parental acceptance was determined by surveys completed both before and after treatment.

Of the 394 needles used in the study, only seven (2%) were displaced and no skin breakdown or cellulitis were reported. Two events occurred during the study, one involved a needle being changed on day six instead of day four, and the other occurred when an infant was sent for an MRI scan with needles *in situ*, although there were no apparent adverse effects. Only one infant was readmitted for NAS management, and this occurred 20 days after NICU discharge.

In addition to being found safe, feasible and acceptable to both providers and parents, medical staff reported that the babies treated with acupuncture cried less, were easier to calm and had lower overall Finnegan scores than average.

The results of these two studies are further supported by a randomized controlled trial conducted by Raith *et al.* (2015). A total of 28 neonates with NAS, born at and admitted to the Division of Neonatology, University of Graz

(Austria), were randomly assigned to receive laser acupuncture plus pharmacological treatment or pharmacological treatment alone. Both groups received oral morphine therapy with the dose adjusted according to changes in Finnegan scores. Phenobarbital was also administered at the onset of NAS symptoms and continued for a fixed period of 10 days. Laser acupuncture was administered daily, approximately 1 h after feeding and morphine administration, with the infant in a relaxed state. Laser acupuncture was administered at auricular points according to the NADA protocol including: Shenmen, sympathetic, kidney, liver, lung. In addition, four body points were stimulated and these comprised Taichong (Liver (LR) 3), Hegu (LI 4), Taixi (KI 3), Shenmen (Heart (HT) 7). Auricular points were stimulated for 30 s, and body points for 60 s (Cabýoglu 2006) each time. Both acupuncturists and infants wore protective eyewear during treatment.

The study found that babies treated with laser acupuncture had a reduced duration of morphine therapy (28 days *vs.* 39) and a reduced length of hospital stay (35 days *vs.* 50) compared with those who received pharmacological intervention only. These results led to overall reductions in cost to the hospital of 26.4%. Furthermore, the treatment was well-tolerated and infants did not show any signs of distress or discomfort while receiving laser acupuncture.

The authors of the study go on to suggest a possible mechanism for acupuncture in the treatment of NAS, citing increases in levels of endomorphin-1, β -endorphin, enkephalin and serotonin in plasma and brain tissue as potentially responsible for acupuncture's analgesic and sedative effects.

Conclusion

Although more research on the topic is undoubtedly required, these studies suggest that both non-insertive and auricular acupuncture offer safe, well-tolerated adjuncts to usual care for infants suffering from NAS. Due to their high acceptance rates by both parents and healthcare professionals, these techniques are worthy of clinical consideration.

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Natalie Saunders graduated from the College of Traditional Acupuncture in 2007. In 2012, she won a scholarship to study advanced acupuncture techniques at Heilongjiang University of Chinese Medicine in China, and it was during this time that she discovered her passion

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