Auricular Medicine in Neonatal Care

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ABSTRACT

This article explores the possibilities of applying ear acupuncture to newborn infants. In addition to the use of needle acupuncture, there are also noninvasive applications that are preferred for patients in this particular age group. Based on the limited literature, ear acupuncture could be an effective nonpharmacologic approach for the treatment of pain in newborn infants and for addressing symptoms of neonatal abstinence syndrome. However, studies on safety, side-effects, and other indications are still lacking.

Keywords: newborn infant, ear acupuncture, pain, procedural pain, neonatal abstinence syndrome

INTRODUCTION

EAR ACUPUNCTURE IS A SPECIAL FORM of acupuncture—a somatotopic kind of acupuncture. The ear arises during the development of a human being from a protuberance of the brain. In addition, the ear is the first organ that is fully developed and fully functional at ~18 weeks after conception. The ear is one of the few anatomical structures that consists of tissue from each of the 3 main tissue types (endo-, ecto-, and mesoderm) of the developing embryo. The term *somatopia* is made up of *soma*, the body, and *topos*, the point (the image of the body in one point, in one area) here in the ear. From here, the entire organism can be influenced by the intervention of setting needles or applied acupressure in the ear. There is evidence that this therapy had been developed in Europe to the form ear acupuncturists are working with today. Paul Nogier, MD, a French doctor, first introduced this therapy to the world in Marseille, in 1957,¹ earning ear acupuncture recognition in its present form.^{1,2}

Although in the past, acupuncture treatment of children did not seem to play a major role in Traditional Chinese Medicine (TCM),³ interest in complementary and integrative therapies for children has been increasing^{4,5} in the last few years. TCM includes (1) massage therapy (known as *Tu'ina*), (2) moxibustion, and (3) different kinds of acupuncture and acupressure.⁶ While substantial research has shown

acupuncture to be an effective therapy for pain in the adult population, there is limited research on acupuncture for the treatment of pain in children. Two studies investigated the effect of acupuncture in smaller children with colic⁷ and for pain management.⁸ Furthermore, the limited data available suggest that acupuncture is a safe nonpharmacologic treatment option for the reduction of pain and agitation in term and preterm infants,⁹ and there is emerging evidence in individual cases to treat newborns with neonatal abstinence syndrome (NAS).^{10,11} However, the literature of ear acupuncture as a treatment option in newborn infants is scant.

METHODS

Although the search strategy was systematic in nature, it was not intended to assess methodological quality or to pool data for meta-analysis. Articles were hand-screened and publications that met inclusion criteria were synthesized into a narrative review.

The search was originally run in March 2018 in electronic databases, electronic clinical trials registry platforms and a manual search of references in relevant publications was performed.

MEDLINE was screened using the search surface PubMed, Embase was assessed via the search surface OvidSP and CINAHL was checked on search surface EBSCOhost, with last

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searches being performed on 31 March 2018. Lastly, we screened reference lists of relevant publications for articles matching our inclusion criteria.

The medical subject headings search terms were: neonatology, neonatal care; newborn, infant, ear acupuncture, auricular medicine, acupuncture, acupressure.

- Inclusion criteria were (1) preterm (<37 weeks of gestational age) or term (>37 weeks of gestational age) neonates, (2) ear acupuncture.
- Additional limits included: English language and human trials.
- No limitation regarding publication date.

DISCUSSION

The existing literature can be divided into (1) ear acupuncture for newborns with NAS and (2) ear acupuncture as a treatment option to address pain in newborn infants.

Ear Acupuncture and NAS

Schwartz et al.¹² studied acupressure uses in newborns with NAS by taping herbal seeds to the ear acupuncture points, *Shenmen* (HT 7), Sympathetic, Liver, Kidney, and Lung, with periodic massage of the seeds. The researchers reported a trend toward less pharmacologic support in the infants treated with ear acupressure, compared to those subjected to standard treatment. In that trial, the ear acupuncture points used were based on the National Acupuncture Detoxification Association (NADA) protocol.¹³ The NADA developed a protocol to treat withdrawal symptoms by applying ear acupuncture.^{13,14} A 2013 review of 48 clinical trials on acupuncture treatment of alcohol, cocaine, nicotine, and opioid dependence demonstrated positive results for reduction of craving and withdrawal symptoms.¹⁵

A pilot study by Weathers et al. investigated the safety, feasibility, and acceptability of ear acupuncture in newborns with NAS, and the researchers concluded that, as a nonpharmacologic adjunct for treating NAS, ear acupuncture is safe, feasible, and acceptable to parents and providers.¹⁶

In a randomized controlled trial (published in 2017) by the current author and several colleagues, laser acupuncture, and a combination of NADA ear acupuncture and body acupuncture, were used to address NAS. The trial demonstrated that duration of oral morphine therapy and length of hospital stays were significantly reduced in an acupuncture group, compared to a control group.¹⁷

Ear Acupuncture for Pain Management in Newborns

Hospitalized newborn infants undergo many painful procedures for treatment or for diagnostic purposes.¹⁸ However, pain and stress have a negative influence on the neonate's rapidly developing neuronal structures, affecting functional

connectivity or dynamic interconnectivity of the small neurobiologic networks in the infant's brain.¹⁹

Previous studies have utilized different acupuncture modalities, including laser acupuncture, acupressure, and noninvasive electrical stimulation. All but one of these used body acupuncture; the one exception was a study that also included an ear acupuncture point into the treatment.²⁰ In premature babies and newborns, their skin is very thin and shows physiologic and histologic peculiarities; hence, it is important that the skin not be damaged, which could create a potential entry for infectious diseases.²¹ Therefore, noninvasive, nonpharmacologic intervention should be considered in infants in these categories.^{22,23}

An interesting approach was taken by Chen et al., who investigated in the single-blinded, randomized, placebo-controlled MAGNIFIC [*Magnetic Noninvasive acupuncture for Infant Comfort*] study—a combination of noninvasive techniques applied to ear acupuncture points.²⁴ The researchers in this study used the Battlefield Acupuncture acute pain protocol, which is used to stimulate five auricular acupuncture points in sequence: (1) Cingulate Gyrus; (2) Thalamus; (3) Omega 2; (4) Point Zero; and (5) *Shenmen*.²⁵ A painful intervention, a heel lance to collect blood for routine screening, was performed.²⁴ A pain score, the Premature Infant Pain Score (PIPP) was used to assess the infants' pain. This pilot study demonstrated that noninvasive magnetic auricular acupuncture was feasible in newborn infants and could reduce PIPP scores during heel pricks. Furthermore, no fatal side-effects were reported.

CONCLUSIONS

Based on the limited literature, acupuncture as well as ear acupuncture can be an effective nonpharmacologic approach for the treatment of pain in newborn infants and to address the symptoms of NAS. However, further studies examining the safety of acupuncture and acupuncture-associated side-effects, as well as direct comparisons of different acupuncture modalities and acupuncture points are warranted. In addition, any acupuncture study protocol should be overseen by a trained acupuncturist in accordance with the *Standards for Reporting Interventions in Clinical Trials of Acupuncture (STRICTA)*,²⁶ an extension of the *Consolidated Standards of Reporting Trials (CONSORT) Statement*²⁷ to improve the quality of the study that is performed.²⁸

AUTHOR DISCLOSURE STATEMENT

No competing financial interests exist.

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