Paediatric Acupuncture: The Evidence

Natalie Saunders & Katherine Berry

Abstract

This article is a review of the current evidence for paediatric acupuncture, focusing on its use for pain, nausea and vomiting, digestive disorders, bedwetting, cerebral palsy, autistic spectrum disorder, asthma and neonatal care.

Keywords
Paediatric, acupuncture, children, babies, teenagers, Chinese medicine, evidence, research

Introduction

The prevalence of chronic childhood conditions is increasing, with 13–27 per cent of children now being affected by chronic conditions.[1] These conditions may last into adulthood and can have a significant impact on the whole family, as well as the affected child. Therefore, it is unsurprising that many families are now seeking complementary and alternative medicine (CAM) and integrative medicine, including acupuncture and related therapies.[2,3] Acupuncture-related therapies include the non-invasive stimulation of acupoints with moxibustion, manual pressure (tui na), laser and transcutaneous electrical nerve stimulation (TENS).

Various reviews have found acupuncture and related therapies to show promise in the treatment of paediatric pain, cerebral palsy, nocturnal enuresis, tic disorders, amblyopia, nausea and vomiting, digestive disorders, autistic spectrum disorder (ASD) and respiratory disorders.[4,5,6] Furthermore, acupuncture is considered safe and well-tolerated,[7,8] with a very low risk of serious adverse effects.

Pain

One of the conditions most commonly treated with acupuncture in people of all ages is pain. According to a 2014 review,[9] an estimated 30.8 per cent of children suffer from chronic pain, and acupuncture may be effective in the relief of migraines and tension type headaches, abdominal pain and acute post-operative pain, as well as dysmenorrhoea in adolescent girls. A retrospective review[10] found that children attending an outpatient service experienced significant improvements in various types of pain following acupuncture treatment, including headaches and migraines, back pain and painful extremities. When children rated their pain on a scale of 1 to 10, they reported average reductions in pain from 5.5 to 2.2 points, and 40 per cent of them reported a complete resolution of their symptoms. Other studies suggest that acupuncture may also be helpful in the treatment of costochondritis[11] and acute pain due to appendicitis.[12]

Nausea and vomiting

Another promising area in paediatric acupuncture is the relief of nausea and vomiting, specifically post-operative nausea and vomiting and chemotherapy-induced nausea and vomiting. A double-blind prospective study on laser acupuncture for nausea and vomiting following eye surgery[13] found that it significantly reduced vomiting compared with sham treatment, with symptoms occurring in just 5 out of 20 patients compared with 17 out of 20 in the control group. Furthermore, just two patients in the genuine treatment group required rescue anti-emetic therapy compared with 14 in the control group. These results are supported by a review conducted in 2015[14] which concluded that acupuncture was effective in the relief of post-operative conditions including nausea, vomiting and delirium following general anaesthetic. A further 2016 review[15] of seven different paediatric trials comprising 727 patients concluded that acupuncture may reduce the risk of nausea and vomiting and decrease the need

for anti-emetic medication. Side effects were found to be mild and self-limiting. However, the quality of the evidence in most trials was deemed to be of low-quality with a high risk of bias. Trials on acupuncture for chemotherapy-induced nausea and vomiting found that acupuncture reduced the severity and duration of symptoms[16] and also increased alertness among patients.[17]

Digestive disorders

A large study of 913 infants[18] aged from newborn to 12 weeks found that acupuncture significantly improved symptoms such as inflated stomach and defecation rates in 690 of its subjects, while 201 subjects saw more subtle improvements. However, other symptoms such as regurgitation actually increased following acupuncture treatment. A further 2016 study[19] found that acupuncture reduced crying time in infants with colic, with more subjects crying for less than three hours a day following acupuncture. A 2018 systematic review[20] of three randomised controlled trials involving 307 patients found that while there were no differences after treatment, during treatment babies treated with acupuncture had a 27 minute reduction in crying and that these results were statistically significant.

When children rated their pain on a scale of 1 to 10, they reported average reductions in pain from 5.5 to 2.2 points, and 40 per cent of them reported a complete resolution of their symptoms.

Bedwetting (nocturnal enuresis)

A 2017 study[21] of 20 patients aged 6 to 22 years found that acupuncture improves nocturnal enuresis symptoms, as well as providing better sleep and quality of life. These results were supported by a 2015 review[22] of 21 studies and 1590 patients, which showed encouraging results for acupuncture as a treatment for nocturnal enuresis. Outcome measures included number of weekly wet nights and maximum voided volume. However, only one study was deemed to be high-quality. A further 2017 review[23] of seven studies conducted on children aged 7 to 15 years concluded that acupuncture was more effective for nocturnal enuresis than either placebo or drug therapy.

Cerebral palsy

A 2018 meta-analysis of randomised controlled trials[24] looked at 21 studies involving 1718 patients, and compared acupuncture plus rehabilitation with rehabilitation alone. It found that acupuncture provided improvements in both gross and fine motor function and improvements in muscle tone and spasticity. Furthermore, there was a high total effectiveness rate, with only mild adverse effects reported. In terms of the quality of the 21 studies included in the analysis, three were classed as grade A, while the remainder were classed as grade B.

Autistic spectrum disorder

A 2009 systematic review[25] of new and emerging treatments for autistic spectrum disorder (ASD) ranked acupuncture as a grade C treatment, meaning that its use is supported by at least one non-randomised controlled trial or two case series. Additionally, a 2011 review[26] including 10 trials and 390 children aged 3 to 18 years, suggests that acupuncture may improve functioning in children with ASD. Six of the reviewed trials indicated improvements in both cognitive and global function, while a further two suggested improvements in communication, linguistic skills, cognitive and global function. A 2010 study[27] found significant improvements in language comprehension and self-care following electro-acupuncture compared with sham treatment. Parents also reported improvements in sociability, receptive language, motor skills, coordination and attention span. A 2018 review[28] found improvements in Childhood Autism Rating Scale and Autism Behaviour Checklist scores when acupuncture was combined with behavioural and educational interventions; the treatment was found to have an 'acceptable' risk of adverse effects. A further 2018 study[29] found that the greatest improvements were in verbal communication. The latter study also suggests that the efficacy of acupuncture for ASD may reduce with increased age.

Asthma

A 2013 study[30] of 52 children aged six months to six years found significant improvements in asthma symptoms following acupuncture treatment. However, these were not maintained following the cessation of treatment, suggesting long-term acupuncture therapy could be necessary. These results are supported by a 2015 systematic review of seven studies and 410 patients.[31] Two of the reviewed studies found improvements in peak expiratory flow following

treatment, while another showed a reduction in asthma-related anxiety.

Neonatal care

Neonates are often subjected to painful procedures[32] for which acupuncture may offer relief.[33] Another condition for which acupuncture may be useful is neonatal abstinence syndrome (NAS), a group of symptoms experienced by babies withdrawing from foetal exposure to illicit drugs or prescription medications such as opioids and benzodiazepines. A 2015 randomised controlled blinded trial[34] found that infants with NAS required a reduced duration of morphine therapy and had a reduced length of hospital stay compared with control subjects, resulting in reduced costs to the hospital of around 26.4 per cent. A retrospective review[35] found that infants with NAS showed improved feeding following acupuncture treatment, were calmer and slept better during and immediately after treatment. These findings are supported by a 2015 pilot study of 20 infants with NAS[36] which recommended acupuncture as a safe, feasible, and effective treatment and a review conducted in 2018.[37]

Acknowledgement

Funding for this project was provided by *An Apple a Day: Healthy Children, Naturally*, an information sharing platform and teaching resource for practitioners at TreatingChildren.com.

Natalie Chandra Saunders graduated from the College of Traditional Acupuncture (UK) in 2007 and completed further study at Heilongjiang University of TCM in 2012. Natalie lived in China for three years where she discovered her passion for writing and translation. Based in the UK, Natalie is a freelance TCM writer and author of *The Qi of Tea*, a discussion of the history and use of tea in TCM. Natalie writes blogs, peer-reviewed journal articles and publishes academic papers to advance the TCM profession.

Katherine Berry is an Australian Acupuncturist living in Ibiza, Spain. Having qualified with a BHSc in TCM Acupuncture in 2000, she went on to study in China and later at University of Technology in Sydney where she achieved her MSc in research in 2006. She is the Director of *An Apple a Day, Healthy Children Naturally* at TreatingChildren.com, an online training platform to provide high quality training in paediatric acupuncture.

References

1. Wijlaars LPMM, Gilbert R, Hardelid P (2016). Chronic conditions in children and young people: learning from administrative data, *Archives of Disease in Childhood,* 101(10): pp. 881-885.
2. Gold JI, Nicolaou CD, Belmont KA et al. (2008). Paediatric Acupuncture: A Review of Clinical Research, *Evidence-Based Complementary and Alternative Medicine*. 2008 Jan 12; 6(4): pp.429-439.
3. Ramesh G, Gerstbacher D, Arruda J et al. (2018). Paediatric Integrative Medicine in Academia: Stanford Children's Experience, *Children,* 5(12): p. 168.
4. Yang C, Hao Z, Zhang LL (2015). Efficacy and safety of acupuncture in children: An overview of systematic reviews, *Paediatric Research,* 78: pp.112–119
5. Milley RJ, Davis R, Kong JT et al. (2015). Acupuncture for Paediatric Conditions: A Narrative Review, *Medical Acupuncture,* 27(6): pp.420-431.
6. Libonate J, Evans C, Tsao JC (2008). Efficacy of acupuncture for health conditions in children: a review. The Scientific World Journal, 13(8): pp.670-82
7. Adams D, Cheng F, Jou H et al. (2011). The Safety of Paediatric Acupuncture: A Systematic Review, *Paediatrics,* 128(6): pp.e1575-e1587.
8. Raith W (2018). Auricular Medicine in Neonatal Care, *Medical Acupuncture,* 30(3): pp.138-140.
9. Golianu B, Yeh A, Brooks M (2014). Acupuncture for Paediatric Pain, *Children,* 1(2): pp.134-148.
10. McDonald MJ (2015). Acupuncture and Acupuncture-Related Therapies Are Well-Tolerated and Can Effectively Provide Pain Relief in the Paediatric Population, *Medical Acupuncture,* 27(6): pp.481-486.
11. Lin K, Tung C (2017). Integrating Acupuncture for the Management of Costochondritis in Adolescents, *Medical Acupuncture,* 29(5): pp.327-330.
12. Nager AL, Kobylecka M, Pham PK (2015). Effects of Acupuncture on Pain and Inflammation in Paediatric Emergency Department Patients with Acute Appendicitis: A Pilot Study, *Journal of Alternative and Complementary Medicine,* 21(5): pp. 269-272.
13. Schlager A, Offer T, Baldissera I (1998). Laser stimulation of acupuncture point P6 reduces postoperative vomiting in children undergoing strabismus surgery, *British Journal of Anaesthesia,* 81(4): pp.529-532.
14. Martin CS (2015). Acupuncture for the Prevention and Treatment of Paediatric Perioperative Conditions, *Medical Acupuncture,* 27(6): pp.411-419.
15. Lee A, Chan SKC, Fan LTY (2015). Stimulation of the wrist acupuncture point PC6 for preventing postoperative nausea and vomiting, *Cochrane Database of Systematic Reviews,* 11:CD003281
16. Yeh CH, Chien LC, Chiang YC et al. (2012). Reduction in Nausea and Vomiting in Children Undergoing Cancer Chemotherapy by Either Appropriate or Sham Auricular Acupuncture Points with Standard Care, *Journal of Alternative and Complementary Medicine,* 18(4): pp.334-340.
17. Reindl TK, Geilen W, Hartmann R et al. (2005). Acupuncture against chemotherapy-induced nausea and vomiting in paediatric oncology, *Supportive Care in Cancer,* 14(2): pp.172-176.
18. Reinthal M, Lund I, Ullman D et al. (2011). Gastrointestinal symptoms of infantile colic and their change after light needling of acupuncture: A case series study of 913 infants, *Chinese Medicine,* 6: 28
19. Landgren K, Hallström I (2017). Effect of minimal acupuncture for infantile colic: A multicentre, three-armed, single-blind, randomised controlled trial (ACU-COL), *Acupuncture in Medicine,* 35(3): pp.171-179.
20. Skjeie H, Skonnord T, Brekke M et al. (2018). Acupuncture treatments for infantile colic: a systematic review and individual patient data meta-analysis of blinding test validated randomised controlled trials, *Scandinavian Journal of Primary Health Care,* 36(1): pp.56-69.
21. Zhu J, Arsovska B, Kozovska K (2017). Nocturnal Enuresis-Treatment with Acupuncture, Journal of Research in Medical and Dental Sciences, 5(4): pp.6-82

22. Lu, ZT, Song W, Wu J et al. (2015). Efficacy of Acupuncture in Children with Nocturnal Enuresis: A Systematic Review and Meta-Analysis of Randomized Controlled Trials, *Evidence-Based Complementary and Alternative Medicine*. 11:320701
23. Azarfar A, Ravanshad Y, Badiei Aval S (2017). Systematic Review and a Meta-Analysis of Using Acupuncture for the Treatment of Nocturnal Enuresis, *Journal of Nephrology & Therapeutics*, 07(02)
24. Li LX, Zhang MM, Zhang Y et al. (2018). Acupuncture for cerebral palsy: A meta-analysis of randomized controlled trials, *Neural Regeneration Research,* 13(6): pp.1107-1117.
25. Rossignol, D.A. (2009). Novel and emerging treatments for autism spectrum disorders: a systematic review, *Annals of Clinical Psychiatry*, 21(4): pp.213-36
26. Cheuk DK, Wong V, Chen WX (2011). Acupuncture for autism spectrum disorders (ASD), *Cochrane Database Systematic Review*. 7(9):CD007849
27. Wong C (2010). Randomized controlled trial of electro-acupuncture for autism spectrum disorder, *Alternative Medicine Review,* 15(2): pp.136-46
28. Lee B (2018). The Efficacy and Safety of Acupuncture for the Treatment of Children with Autism Spectrum Disorder: A Systematic Review and Meta-Analysis, *Evidence-Based Complementary and Alternative Medicine*, Article ID 1057539
29. Yau IC (2018). The therapeutic effect of scalp acupuncture on natal autism and regressive autism, *Chinese Medicine*, 13(30).
30. Karlson B (2013). Acupuncture in asthmatic children: a prospective, randomized, controlled clinical trial of efficacy, *Alternative Therapies in Health and Medicine,* 19(4)
31. Liu CF. (2015). Efficacy of acupuncture in children with asthma: a systematic review, Italian Journal of Paediatrics, 41(48)
32. Yates C, Mitchell AJ, Lowe LM et al. (2015). Safety of noninvasive electrical stimulation of acupuncture points during a routine neonatal heel stick, *Deutsche Zeitschrift für Akupunktur*, 58(1): pp.29–30
33. Chen KL, Quah-Smith I, Schmölzer GM et al. (2017). Acupuncture in the neonatal intensive care unit - Using ancient medicine to help today's babies: A review, *Journal of Perinatology*, 37(7)
34. Raith W, Schmölzer GM, Resch B et al. (2015). Laser Acupuncture for Neonatal Abstinence Syndrome: A Randomized Controlled Trial, *Pediatrics,* 136(5): pp.876-84
35. Filippelli AC, White LF, Spellman LW et al. (2012). Non-insertive Acupuncture and Neonatal Abstinence Syndrome: a Case Series from an Inner-city Safety Net Hospital, *Global Advances in Health and Medicine*, 1(4): pp.48-52.
36. Weathers L, Driver K, Zaritt J et al. (2015). Safety, Acceptability, and Feasibility of Auricular Acupuncture in Neonatal Abstinence Syndrome: A Pilot Study, *Medical Acupuncture*, 27(6): p. 453-460.
37. Jackson HJ, Lopez C, Miller S, Englehardt B. A Scoping Review of Acupuncture as a Potential Intervention for Neonatal Abstinence Syndrome. Medical Acupuncture. 2019 Mar 1.