PREFERRED PRACTICE PATTERN®

CLINICAL QUESTIONS

Acupuncture to Slow Myopia in Children

AMERICAN ACADEMY® OF OPHTHALMOLOGY
The Eye M.D. Association

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Preferred Practice Pattern® (PPP) Clinical Questions are evidence-based statements that guide clinicians in providing optimal patient care. PPP Clinical Questions answer specific questions in the "Patient, Intervention, Comparison, Outcome" (PICO) format.

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Methods and Key to Ratings

Preferred Practice Pattern Clinical Questions should be clinically relevant and specific enough to provide useful information to practitioners. Where evidence exists to support a recommendation for care, the recommendation should be given an explicit rating that shows the strength of evidence. To accomplish these aims, methods from the Scottish Intercollegiate Guideline Network (SIGN)[1] and the Grading of Recommendations Assessment, Development and Evaluation (GRADE)[2] group are used. All studies used to form a recommendation for care are graded for strength of evidence individually. To rate individual studies, a scale based on SIGN[1] is used. GRADE is a systematic approach to grading the strength of the total body of evidence that is available to support recommendations on a specific clinical management issue. Organizations that have adopted GRADE include SIGN, the World Health Organization, the Agency for Healthcare Research and Policy, and the American College of Physicians.[3]

SIGN[1] Study Rating Scale

I++	High-quality meta-analyses, systematic reviews of randomized controlled trials (RCTs), or RCTs with a very low risk of bias
I+	Well-conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias
I-	Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias
II++	High-quality systematic reviews of case-control or cohort studies High-quality case-control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal
II+	Well-conducted case-control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal
II-	Case-control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal
III	Nonanalytic studies (e.g., case reports, case series)

GRADE[2] Quality Ratings

Good quality	Further research is very unlikely to change our confidence in the estimate of effect
Moderate quality	Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate
Insufficient quality	Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate Any estimate of effect is very uncertain

GRADE[2] Key Recommendations for Care

Strong recommendation	Used when the desirable effects of an intervention clearly outweigh the undesirable effects or clearly do not
Discretionary recommendation	Used when the trade-offs are less certain—either because of low-quality evidence or because evidence suggests that desirable and undesirable effects are closely balanced

PPP Clinical Question

TOPIC

Acupuncture for slowing myopia progression in children and adolescents

CLINICAL QUESTION

What is the evidence that acupuncture is effective and safe in slowing the progression of myopia in children and adolescents?

LITERATURE SEARCH

The PubMed portion of the Cochrane search was updated on May 16, 2013. Five new citations were found, but none met the inclusion criteria of the review.

Literature search details

SYSTEMATIC REVIEW

Wei ML, Liu JP, Liu M. Acupuncture for slowing the progression of myopia in children and adolescents (Review). Cochrane Database of Systematic Reviews 2011, Issue 9. Art. No.: CD007842. DOI: 10.1002/14651858. CD007842.pub2.

Recommendations for Care

SUMMARY

Myopia is one of the most common refractive errors in children, starting at approximately six to eight years of age and progressing through adolescence. Early detection and treatment of myopia is associated with better visual outcomes. Traditional Chinese medicine practitioners frequently use various forms of acupuncture (i.e., fine needle insertion, acupressure, surface electricity, and laser stimulation) for the treatment of myopia. A systematic review identified two randomized control trials (RCTs) for preventing progression of myopia in children. Both studies were small, experienced considerable subject attrition, and did not evaluate intervention effects in a manner that the reviewers considered valid. The results were not combined as the two trials assessed different outcomes. The studies were unable to provide evidence that acupuncture slowed the progression of myopia. Therefore, the decision to recommend acupuncture in children with myopia should be individualized to the patient's needs and preferences, as the data do not support a clear conclusion for either benefit or harm of the treatments discussed herein.

(Study Rating Scale I-, Insufficient Quality, Discretionary Recommendation)

DISCUSSION

The purpose of this review is to evaluate the existing data regarding the effectiveness and safety of acupuncture in slowing the progression of myopia in children and adolescents. The Cochrane Review authors systematically reviewed the evidence for any type of acupuncture treatment for myopia in children and adolescents. Studies included in their review were RCTs where study participants consisted of people under the age of 18 with a diagnosis of myopia. Myopia was

defined in the study populations via: a) rechecking corrected visual acuity (VA) and achieving normal VA (20/20, 6/6, or 1.0) using an age-appropriate vision test; b) confirming myopia via cycloplegic refraction; and c) excluding participants with ocular pathology via external and internal eye examination.

The interventions studied included: acupressure, auricular acupuncture, conventional acupuncture, electroacupuncture, laser acupuncture, eye exercise, and combination of more than one acupuncture approach. Control conditions in eligible trials included no intervention, sham acupuncture, non-specific treatment, or glasses. The studies had to report myopia progression (i.e., one diopter (D) mean change) or the proportion of subjects whose myopia increased by one D per year. Secondary outcomes included mean change in axial length or corneal radius of curvature. Outcomes could be assessed at three months, six months, and one year. Adverse events were also reported and graded for severity.

The Cochrane search identified two RCTs (both conducted in Taiwan) meeting these inclusion criteria. One study evaluated the effectiveness of auricular acupuncture plus 0.25% atropine eyedrops (versus 0.25% atropine eyedrops or 0.5% atropine eyedrops alone) in 71 children ages 6 to 15 years old, with treatment given for at least six months. The second trial studied acupressure in combination with interactive media (versus no intervention) in 83 fifth-grade children, with treatment given for 15 weeks.

Neither trial reported on myopia progression (as defined by one D mean change) or the proportions of subjects experiencing such progression. The trial of auricular stimulation plus 0.25% atropine did not identify a significant treatment effect, as measured by mean change in axial length or in the pre-post difference in refraction error. The other study found that acupressure plus interactive media was associated with a significantly smaller pre-post change in refraction error than no intervention; however, the Cochrane review authors viewed this analysis as problematic (i.e., paired-eye data that present the mean VA from the two eyes that are difficult to interpret). Furthermore, the study's design flaw does not permit any conclusive evidence to separate the effect of acupressure. Finally, there were seven subjects (9.9%) who, dropped out of the auricular stimulation plus atropine study, while 13 (15.7%) withdrew from the acupressure plus interactive media study, further reducing the impact of any conclusions. Both studies found several children experienced mild pain while pressing and dropped out.

CONCLUSION

A systematic review identified two RCTs for preventing progression of myopia in children. Both studies were small, experienced considerable subject attrition, and did not evaluate intervention effects in a manner that the Cochrane reviewers considered valid. The results were not combined as the two trials assessed different outcomes. The studies were unable to provide evidence of the effect of acupuncture for slowing the progression of myopia. Therefore, the decision to recommend acupuncture in children with myopia should be individualized to the patient's needs and preferences, as these data do not permit any clear conclusions regarding the benefits or harms of these proposed treatments.

More trials should be conducted in the future where acupuncture is compared to placebo, other types of acupuncture are investigated, and treatment compliance for at least six months is explored. Axial length elongation of the eye should also be investigated in such trials for at least one year.

References

1. Scottish Intercollegiate Guidelines Network. SIGN 50: a guideline developer's handbook. Available at: www.sign.ac.uk/methodology/index.html. Accessed May 12, 2013.
2. Guyatt GH, Oxman AD, Vist GE, et al. GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. BMJ 2008;336:924-6.
3. GRADE Working Group. Organizations that have endorsed or that are using GRADE. Available at: www.gradeworkinggroup.org/society/index.htm. Accessed May 12, 2013.