Cochrane for Clinicians

Putting Evidence into Practice

Positional Therapy for Obstructive Sleep Apnea

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Clinical Question

Is positional therapy effective for the treatment of obstructive sleep apnea (OSA)?

Evidence-Based Answer

Positional therapy for OSA reduces scores on the apnea-hypopnea index (AHI) and Epworth Sleepiness Scale compared with no treatment. Although continuous positive airway pressure (CPAP) improves AHI scores more than positional therapy, patients seem to better tolerate positional therapy and, therefore, have improved adherence vs. those treated with CPAP.[1] (Strength of Recommendation: B, based on inconsistent or limited-quality patient-oriented evidence.)

Practice Pointers

OSA affects 2% to 38% of the population in North America and Europe.[2] The severity of OSA symptoms is estimated by the AHI and the Epworth Sleepiness Scale. OSA has been associated with higher morbidity and mortality rates, lower quality-of-life scores, and health problems such as atrial fibrillation, congestive heart failure, coronary artery disease, depression, diabetes mellitus, hypertension, and stroke.[3] CPAP is the current first-line therapy; however, up to two-thirds of patients do not adhere to treatment.[4] Positional therapies for OSA ideally prevent patients from lying in a supine position and promote side sleeping. Available positional therapy devices include lumbar or abdominal binders, backpacks, full-length pillows, tennis balls attached to the back of nightwear, and alarms with positional sensors.[1]

This Cochrane review of eight studies explored the effectiveness of positional therapy for OSA compared with CPAP (n = 72) and with an inactive control (n = 251).[1] Three studies used vibration alarm devices, and five studies included physical positioning equipment such as pillows and semirigid backpacks. All of the trials were of relatively short duration, ranging from one night to two months.

CPAP reduced AHI scores compared with positional therapy (mean difference [MD] = 6.4 events per hour; 95% CI, 3.0 to 9.8; n = 33). However, patients used positional therapy more than CPAP (MD = 2.5 hours per night; 95% CI, 1.4 to 3.6; n = 20). No significant differences were found between the groups in reported quality of life measured using the 36-item Short Form Health Survey or the Functional Outcomes of Sleep Questionnaire, sleep quality using the mean percentages of slow wave and rapid eye movements sleep, or self-reported adverse effects. There were also no demonstrated differences in Epworth Sleepiness Scale scores between CPAP and positional therapy.

Two studies demonstrated that positional therapy significantly decreased Epworth Sleepiness Scale scores compared with an inactive control (MD = –1.58; 95% CI, –2.89 to –0.29; n = 187). Four studies showed that positional therapy also decreased AHI scores compared with an inactive control (MD = –7.38 events per hour; 95% CI, –10.10 to –4.70). At eight weeks there was no difference in adherence to positional therapy vs. an inactive control (odds ratio = 0.80; 95% CI, 0.33 to 1.94; n = 101).

The American Academy of Sleep Medicine published guidelines in 2009 recognizing that positional therapy could be effective as a second-line therapy or as a supplement to CPAP therapy in patients with a documented lower AHI score in nonsupine vs. supine positions.[5] The American Academy of Sleep Medicine recommends

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CME **This clinical content** conforms to AAFP criteria for continuing medical education (CME). See CME Quiz on page 11.

performing a sleep study to document reduction in the AHI score with positional changes before initiating positional therapy, and it does not recommend any specific intervention. The guideline does acknowledge that alarms, pillows, backpacks, and tennis balls have been shown to be effective.[5] Given the limited risks, discussion of positional therapy options between physician and patient could be considered if CPAP therapy is not tolerated.

The practice recommendations in this activity are available at http://www.cochrane.org/ CD010990.

Editor's Note: The numbers needed to treat reported in this Cochrane for Clinicians were calculated by the authors based on raw data provided in the original Cochrane review.

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Antepartum Omega-3 Fatty Acid Intake and Length of Gestation

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Clinical Question

Are omega-3 fatty acids safe and effective for reducing the risk of preterm birth (before 37 weeks' gestation) and early preterm birth (before 34 weeks' gestation)?

Evidence-Based Answer

Omega-3 fatty acids, whether taken as supplements or consumed as part of the diet, reduce the risk of preterm birth (number needed to treat = 68) and early preterm birth (number needed to treat = 55). However, they also increase the risk of prolonged gestation (more than 42 weeks; number needed to harm = 102).[1] (Strength of Recommendation: A, based on consistent, good-quality patient-oriented evidence.)

Practice Pointers

Preterm birth accounts for 85% of perinatal complications and deaths,[2] and the percentage is increasing in the United States.[3] Previous observational and cohort studies have suggested that omega-3 fatty acid intake can reduce the risk of preterm birth.[1] A recent study in Norway evaluated food and supplement intake in a cohort of 67,000 pregnant women. It showed that seafood consumption was associated with a lower prevalence of preterm delivery, whereas use of omega-3 supplements resulted in a lower prevalence only of early preterm delivery.[4] (The authors did not specify the type of seafood consumed.) The anti-inflammatory properties of omega-3 fatty acids may be the mechanism by which intake influences delivery timing.[1] The primary outcomes discussed in this review were preterm birth, early preterm birth, and prolonged gestation in relation to omega-3 fatty acid intake in any form. The authors also investigated a number of secondary outcomes involving maternal, perinatal, neonatal, and child health.

This Cochrane review, which included 70 randomized controlled trials and 19,927 women, compared omega-3 fatty acid intake to placebo or no intake.[1] Omega-3 fatty acid intake involved using supplements, eating foods rich in omega-3 fatty acids, or receiving advice to consume these types of foods. The studies included women at low, high, and mixed risk of poor pregnancy outcomes based on a combination of factors, including history and age. Most of the studies investigated the effect of omega-3 fatty acids in the form of supplements. The study-level risk of bias was mixed. Most trials were conducted in upper-middle income or high-income countries, with the highest number conducted in the United States.

Patients who used omega-3 fatty acids demonstrated a reduced risk of preterm birth (11.9% vs. 13.4% in those who did not use them; relative risk [RR] = 0.89; 95% CI, 0.81 to 0.97), as well as a reduced risk of early preterm birth (2.7% vs. 4.6%; RR = 0.58; 95% CI, 0.44 to 0.77). A subgroup analysis showed a decreased risk of prelabor rupture of membranes in those using omega-3 fatty acids (RR = 0.46; 95% CI, 0.28 to 0.76; four trials; 1,281 participants). However, omega-3 fatty acid intake increased the risk of prolonged gestation (2.6% vs. 1.6%; RR = 1.61; 95% CI, 1.11 to 2.33).

The studies also demonstrated a reduced risk of low birth weight with omega-3 fatty acids (14% vs. 15.6%; RR = 0.90; 95% CI, 0.82 to 0.99). There were no statistically significant differences in maternal outcomes. In addition, the authors evaluated a variety of neurodevelopmental and growth outcomes in children but concluded that there were no differences between those who were treated and those who were not.

The 2012 American College of Obstetricians and Gynecologists practice bulletin, "Prediction and Prevention of Preterm Birth," does not make a recommendation about

SUMMARY TABLE

Illustrative Outcomes of Pregnancies in Which Mothers Used Antepartum Omega-3 Fatty Acids

Outcomes	Probable outcome with use of omega-3 fatty acids (95% CI)	Probable outcome without use of omega-3 fatty acids	NNT or NNH (95% CI)	Participants (studies)
Preterm birth (less than 37 weeks' gestation)	119 per 1,000 (109 to 130)	134 per 1,000	68 (39 to 238)	10,304 (26)
Early preterm birth (less than 34 weeks' gestation)	27 per 1,000 (20 to 35)	46 per 1,000	52 (39 to 95)	5,204 (9)
Gestation greater than 42 weeks	26 per 1,000 (18 to 37)	16 per 1,000	102 (47 to 568)	5,141 (6)
Low birth weight	140 per 1,000 (128 to 154)	156 per 1,000	63 (36 to 500)	8,449 (15)
Serious adverse events for neonate/infant	45 per 1,000 (37 to 62)	63 per 1,000	56 (38 to 1,000)	2,690 (2)

NNH = number needed to harm; NNT = number needed to treat.

using omega-3 fatty acids to prevent preterm birth.[5] Since then, several systematic reviews and meta-analyses have been published about whether supplementation decreases the risk of preterm birth. The results of three studies were consistent with those of the Cochrane review in demonstrating that omega-3 fatty acids reduce the risk of preterm birth,[6-8] but two other studies showed no difference.[9,10] The one large systematic review from the Agency for Healthcare Research and Quality acknowledged a longer duration of gestation but found no overall change in the risk of preterm birth, suggesting that this prolonged duration of pregnancy may not be clinically relevant. The authors of that review concluded that the studies had an overall low strength of evidence.[10] According to this Cochrane review, omega-3 fatty acid intake can be an effective way to reduce the risk of preterm birth, but the clinical context of the individual patient should be taken into consideration given the possibility of increased length of gestation. It is worth noting that in the United States it is standard of care to consider induction of labor in any woman whose gestation reaches 41 0/7 weeks.

The practice recommendations in this activity are available at http://www.cochrane.org/CD003402.

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