Exploring other uses of tricyclic antidepressants (TCAs): Efficacy, safety, and tolerability of using nortriptyline as an analgesic: a systematic review and meta-analysis

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Abstract

Aim: Since the efficacy of some tricyclic antidepressants (TCAs) in reducing pain has been reported, several studies have evaluated the analgesic potency of other drugs in this category. This study aims to accumulate all the data evaluating the efficacy of nortriptyline in reducing pain.

Methods: In accordance with the PRISMA guideline, clinical trials were imported from PubMed, Web of Science, and Scopus (until February 2023). Screening stages (based on pre-defined eligibility criteria) and data extraction were conducted by two independent researchers. Random- and fixed-effect meta-analysis was performed to pool the data. Publication bias and study heterogeneity were assessed. The Cochrane Collaboration tool was utilized to determine the risk of bias, and the certainty of outcomes was evaluated by the Grade criteria.

Results: Of the initial 648 studies, 14 were finally imported. Except for one study, all other studies reported that nortriptyline significantly reduces various types of pain. The pooled standardized mean difference (95% CI) of reducing pain score as pre- and post-treatment, compared with placebo, and compared with other alternative analgesics were -1.20 [-1.48, -0.93], 0.43 [0.23, 0.64], and -0.18 [-0.39, 0.03], respectively. While the most reported side effects were dry mouth and constipation, all studies reported that side effects were not serious and were well tolerated. Outcomes for the effectiveness of nortriptyline and its tolerability got high certainties. Some studies reported the equality of nortriptyline with amitriptyline and gabapentin in terms of their analgesic effects.

Conclusion: Using nortriptyline as an analgesic is effective while being safe and well-tolerated.

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