INPLASY

Dual orexin receptor antagonists in obstructive sleep apnea and their effects on sleep and respiratory parameters: A systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Data analysis.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202450120

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 26 May 2024 and was last updated on 26 May 2024.

INTRODUCTION

Review question / Objective P: Patients with obstructive sleep apnea. I: dual orexin receptor antagonist C: placebo. O: sleep architecture, respiratory functions.

Condition being studied Dual orexin receptor antagonists (DORAs) are indicated for the treatment of insomnia disorder. DORAs are effective in enhancing sleep initiation and maintenance; meta-analysis showed that DORAs increased total sleep time (TST), sleep efficiency (SE), and decreased sleep latency (SL) in patients with chronic insomnia. Sleep disturbance is prevalent in patients with OSA, due to repeated total or partial upper airway obstruction casing sleep fragmentation. [13] Hypnotics should be used with cautions in patients with OSA because some sedative hypnotics may worsen sleep apnea and nocturnal oxygen saturation, causing worsen sleep quality, and may further disrupted sleep architecture. [14] DORAs are effective and safe for treating primary insomnia. [15, 16] Hence, it is crucial to understand the impact of DORAs on the sleep patterns and breathing of OSA patients, as they often experience sleep disturbances. This systematic review and meta-analysis aimed to clarify the effects of DORAs, used in treating OSA, on the sleep architecture and respiratory functions of these patients.

METHODS

Participant or population Adult patients with obstructive sleep apnea.

Intervention Dual orexin receptor antagonists.

Comparator Placebo.

Study designs to be included Randomized placebo-controlled trials.

Eligibility criteria (1). randomized controlled clinical trials involving adult humans; (2) patients with a confirmed diagnosis of OSA; (3) studies evaluating the effects of DORAs on sleep parameters and respiratory parameters detected

using in-lab polysomnography (PSG); and (4) formally published articles.

Information sources Electronic databases.

Main outcome(s) Total sleep time, sleep efficiency, AHI.

Quality assessment / Risk of bias analysis A sensitivity test with the one-study-removal method for meta-analyses was applied to evaluate the potential confounding effect of any outlier within the assessed studies. A meta-regression analysis was performed with an unlimited maximum likelihood of random-effects models of single variables to eliminate the possible confounding effect of clinical variables when >10 datasets were included.

Strategy of data synthesis Because of the expected heterogeneity of the sample, a random-effects model meta-analysis was performed because the former modeling could implement the assessment of a between-study variance in the calculations. The entire meta-analysis procedure was performed using Comprehensive Meta-Analysis (version 3; Biostat Inc., Englewood, NJ, USA). Hedges' g and 95% confidence intervals (CIs) were chosen to integrate the effect sizes (ESs), according to the manual of Comprehensive Meta-Analysis (version 3). ESs were outlined as small, medium, and large when Hedges' g was 0.8, respectively. For all analyses, two-tailed p-values <0.05 were used to denote statistical significance.

Subgroup analysis Because of the considered wide range of treatment length among the included RCTs, we performed subgroup analysis regarding treatment numbers (i.e., sicngle dosage).

Sensitivity analysis A sensitivity test with the one-study-removal method for meta-analyses was applied to evaluate the potential confounding effect of any outlier within the assessed studies.

Language restriction No.

Country(ies) involved Taiwan/Kaohsiung Medical University.

Keywords dual orexin receptor antagonist, obstructive sleep apnea, daridorexant, lemborexant, suvorexant.

Contributions of each author
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