



Hypoxic burden to guide CPAP treatment allocation in patients with obstructive sleep apnoea: a *post hoc* study of the ISAACC trial

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Hypoxic burden stands out as an obstructive sleep apnoea severity metric with potential clinical utility to identify patients most likely to benefit from continuous positive airway pressure treatment for secondary cardiovascular prevention <https://bit.ly/3szv4hf>

Cite this article as: Pinilla L, Esmaeili N, Labarca G, *et al.* Hypoxic burden to guide CPAP treatment allocation in patients with obstructive sleep apnoea: a *post hoc* study of the ISAACC trial. *Eur Respir J* 2023; 62: 2300828 [DOI: 10.1183/13993003.00828-2023].

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This article has an editorial commentary: <https://doi.org/10.1183/13993003.01741-2023>

Abstract

Background Hypoxic burden (HB) has emerged as a strong predictor of cardiovascular risk in obstructive sleep apnoea (OSA). We aimed to assess the potential of HB to predict the cardiovascular benefit of treating OSA with continuous positive airway pressure (CPAP).

Methods This was a *post hoc* analysis of the ISAACC trial (ClinicalTrials.gov: NCT01335087) including non-sleepy patients with acute coronary syndrome (ACS) diagnosed with OSA (apnoea–hypopnoea index ≥ 15 events·h⁻¹) by respiratory polygraphy. Patients were randomised to CPAP or usual care and followed for a minimum of 1 year. HB was calculated as the total area under all automatically identified desaturations divided by total sleep time. Patients were categorised as having high or low baseline HB according to the median value (73.1%min·h⁻¹). Multivariable Cox regression models were used to assess whether the effect of CPAP on the incidence of cardiovascular outcomes was dependent on the baseline HB level.

Results The population (362 patients assigned to CPAP and 365 patients assigned to usual care) was middle-aged (mean age 59.7 years), overweight/obese and mostly male (84.5%). A significant interaction was found between the treatment arm and the HB categories. In the high HB group, CPAP treatment was

Received: 17 May 2023
Accepted: 27 Aug 2023



associated with a significant reduction in the incidence of cardiovascular events (HR 0.57, 95% CI 0.34–0.96). In the low HB group, CPAP-treated patients exhibited a trend toward a higher risk of cardiovascular outcomes than those receiving usual care (HR 1.33, 95% CI 0.79–2.25). The differential effect of the treatment depending on the baseline HB level followed a dose–response relationship.

Conclusion In non-sleepy ACS patients with OSA, high HB levels were associated with a long-term protective effect of CPAP on cardiovascular prognosis.