



## Recent highlights on the prevalence and role of sleep disordered breathing in cardiovascular diseases from the *International Journal of Cardiology Heart & Vasculature*

Sleep disturbances and sleep disordered breathing (SDB) have been associated widely with cardiovascular diseases [1–5]. Also misalignment of the internal circadian time with external physical time due to environmental factors or due to genetic variation in circadian clock genes has been associated with increased incidence of cardiovascular risk factors [6]. Particularly in patients with atrial fibrillation (AF), recent research has focused on the role of SDB on AF management, but clinical implementation of SDB-treatment in this large patient population is still suboptimal [1]. Recent surveys on SDB and its management in patients with AF showed that there is no clinical equipoise among surveyed cardiologists; a majority expressed certainty that combined SDB and AF treatment is superior to AF treatment alone for improving AF outcomes [7,8]. However, a minority of surveyed cardiologists referred AF patients for SDB testing, and while half of screened AF patients had SDB, positive airway treatment was initiated in slightly more than half of them, reflecting the view that better clinical trial evidence is needed to support this practice. In this commentary, we summarize recent work published in the *International Journal of Cardiology Heart & Vasculature* providing further insights in this emerging area.

SDB is highly prevalent in patients with AF. In a Norwegian cohort of 579 patients with paroxysmal AF, moderate-severe SDB (AHI  $\geq 15$ ) was detected in 42.1 % [9,10]. In a Danish cohort of 126 patients with AF, moderate-to-severe SDB was diagnosed in 57 % of patients [11,12]. In an Australian cohort of 442 patients with AF, moderate-to-severe SDB was present in 33 % of the cohort [13]. In a Dutch cohort of 119 patients scheduled for AF catheter ablation procedures, moderate-to-severe SDB was prevalent in 55 % [14]. The between-study differences in SDB prevalence in AF patients may result from differences in the mode of SDB detection and in the patient selection. However, all studies with systematic SDB testing in patients with AF always show a high prevalence of SDB [15].

Importantly, in AF patients, who typically describe a high burden of symptoms [16–18], moderate-to-severe SDB does not manifest in typical SDB symptoms such as daytime sleepiness [9,15]. Therefore, the lack of excessive daytime sleepiness, assessed by history taking or available questionnaires, should not preclude patients from being investigated for the potential presence of concomitant SDB. Simpler screening devices such as overnight oximetry, algorithms included in wearables or ECG-derived respiration monitoring included in Holter software may allow more stream-lined implementation of SDB management in AF clinics [19].

The knowledge about concomitant risk factors such as SDB status in AF patients is important to approximate success rates of interventions [20–23]. AF ablation is effective and safe in obese and diabetic patients

with and without SDB [24–27]. Observational studies and *meta*-analyses showed that appropriate SDB treatment may improve rhythm control in AF patients [28]. Therefore, undiagnosed SDB in patients with AF is an underutilized opportunity for arrhythmia treatment, although SDB management in patients with AF requires a multidisciplinary and personalized management approach [29,30]. Besides this, SDB, together with concomitant obesity and chronic obstructive pulmonary disease [31], increases the risk of peri-procedural hypoxia and carbon dioxide accumulation in AF patients undergoing AF ablation with deep conscious sedation [32,33]. In this setting, hypnotic communication for peri-procedural analgesia instead of pharmacological sedation may decrease the risk of respiratory insufficiency in these patients [34–36].

The take-home message of this selection of studies published in the *International Journal of Cardiology Heart and Vasculature* is that up to 50 % of all AF patients present with moderate-to-severe SDB and that lack of excessive daytime sleepiness should not preclude AF patients from being investigated for potential presence of concomitant SDB. Additional research is required to establish the best strategy to broadly implement SDB testing in AF patients and systematically assess the effect of SDB treatment in the different patient populations with cardiovascular comorbidities [37].

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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