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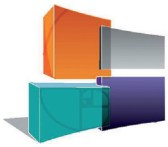

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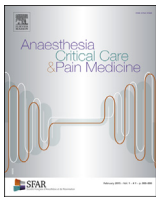

Editorial

Obstructive sleep apnoea and postoperative complications: A significant link?

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The Obstructive Sleep Apnoea (OSA) Syndrome is characterised by a sleep-disordered breathing made of intermittent obstruction of the upper respiratory tract. This leads to periodic cessations or decreases in airflow during breathing efforts. Poor airflow frequently leads to haemoglobin desaturation, deep negative intrathoracic pressure, and in most cases, sleep disruption caused by brief arousals [1]. These consequences can lead to cardiovascular disease, cognitive deficits, daytime somnolence, and poor quality of life. OSA severity is assessed by the Apnoea Hypopnea Index (AHI). AHI represents the number of apnoea/hypopnea episodes per hour of sleep. Patients with AHI between 5 and 14.99 are said mild, those with AHI between 15 and 24.99 are considered moderate, whereas the ones with AHI higher to 30 are said severe [2].

A major causal factor for OSA is obesity. About two thirds of moderate and severe OSA syndrome can be attributed to obesity. Other predisposing factors include retro and micrognathia, adenotonsillar hypertrophy, arched palate, male gender, age, alcohol or sedative use, just to cite a few [3].

OSA is a risk factor for drug induced respiratory depression in the surgical ward. These apnoea episodes can be life threatening. Drugs involved in such adverse events include benzodiazepines and opioids. Although restrictions on the use of the aforementioned drugs in OSA patients have been suggested, poor outcomes related to sedatives and opioid use in OSA patients still occur nowadays [3,4]. In addition to upper airway obstruction, OSA is associated with an increased risk of postoperative complications, including cardiac, respiratory, and thrombotic events, as well as unplanned admission to ICU and longer length of hospital stay [5,6]. This was suggested by the results of numerous studies [7], but most of them had methodological flaws, which makes it difficult to draw any valid conclusion. For example, in some studies, patients were characterised as OSA or non-OSA patients on the basis of the STOP BANG score or of overnight oximetry [7]. Both methods have limitations and can lead to misclassification of about 20% of patients [8].

Considering all patients with OSA at risk for postoperative complications would lead to increased costs and resources utilisation [9]. Consequently, there was a need for rationalisation in the selection of patients to be considered as high-risk. Fortunately, over the last five years, large and well-designed studies demonstrate that only the most severe OSA patients are at increased risk for postoperative complications. In 2014, Mutter et al. studied a group of 20,488 patients during a week after a variety of common surgical procedures [10]. They found that only severe OSA patients (AHI $>$ 30 events per hour) were at higher risk of postoperative complications. Also, recently, Chan published the results of a multicentric study assessing the rate of cardiovascular complications in a cohort of 1218 high-risk patients without prior diagnosis of OSA, undergoing major non-cardiac surgery [11]. The follow-up period was 30 days. The patients were classified as mild, moderate and severe, preoperatively based on portable sleep monitoring. Consistent with the results of Mutter's study, they found that only the patients with severe OSA had a higher risk of complications. Based on these two studies, it can be suggested that only severe OSA patients deserve "intensive" postoperative monitoring (Fig. 1).

Therefore, every effort must be made to detect and diagnose severe OSA. This would allow optimal resources utilisation. For that purpose, predictive scores specifically designed to detect severe OSA patients, such as the DES-OSA score, would be useful [12]. Also, detecting OSA patients with nocturnal hypoxemia (and maybe patients with nocturnal and diurnal hypoxemia) would be interesting as these patients would be at higher risk of complications (Fig. 1) [13–17]. The impact of central sleep apnoea on the development of postoperative complications in patients with OSA deserves further investigation too.

Adequate perioperative management of patients with OSA is crucial to prevent perioperative complications. Recent studies suggest that only severe OSA patients are at higher risk of postoperative complications. Hence, perioperative interventions should be proposed only to this group of patients, but this should be confirmed by further research. Also, tools must be developed and used to detect these severe OSA patients and those with nocturnal hypoxemia. In the future, OSA management will consist in a combination of improved efficiency and a reduction in

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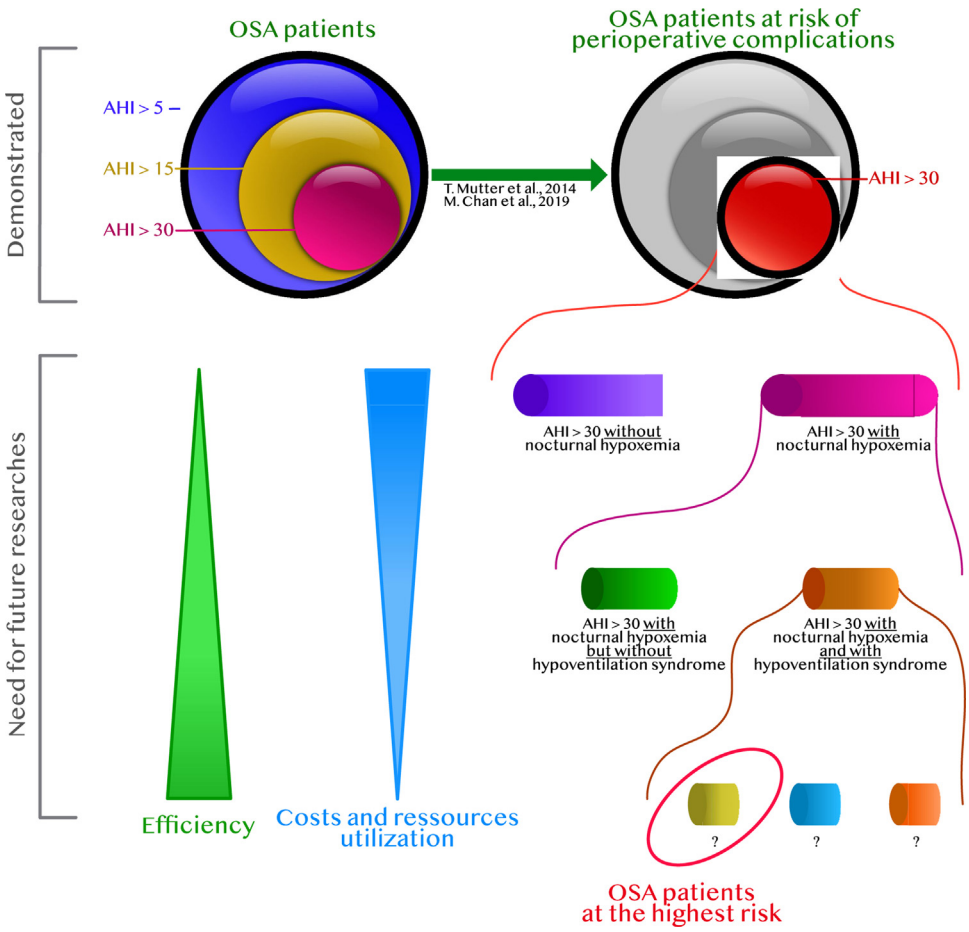

Fig. 1. Schematisation of high-risk OSA population in terms of postoperative complications. The upper part represents the rationalisation in terms of resources utilisation allowed by the significant results of the study of Mutter et al. and Chan et al. (see text) [10,11]. The lower part illustrates area of present and future researches actually developed to promote a perioperative-individualised optimisation.

resources utilisation (cost effectiveness, perioperative medicine with individualised optimisation, Fig. 1).

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Disclosure of interest

The authors declare that they have no competing interest.

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