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### Impact of short-acting vs. standard anaesthetic agents on obstructive sleep apnoea: a randomised controlled triple-blind trial

We read with interest the recent article by Albrecht et al. [1] investigating the use of short-acting anaesthetic agents on obstructive sleep apnoea (OSA). They concluded that short-acting anaesthetic agents do not appear to reduce the severity of OSA compared with standard agents and that current recommendations should be revised. While OSA clearly has implications for anaesthetic technique, we wonder if the correct population and outcome were identified and studied, and if the conclusions are justified.

Reviewing the design of the study, some patients were selected with sleep studies non-diagnostic for OSA. Despite the fact that the baseline mean apnoea-hypopnoea index (AHI) in both groups was remarkably high for unselected patients (>17), it should be noted that 17% and 12% of the standard and short-acting agent groups, respectively, had an AHI of <5. Thus, the study was designed to assess the impact of short and standard general anaesthetic agents on apnoeic events, rather than their impact on patients with OSA. This is not clear from the title of the paper and the reasoning behind this decision is not explained.

Patients with OSA on treatment with continuous positive airway pressure were not included from the study. Patients with an AHI >15 are eligible for continuous positive airway pressure. Given that the general population mean AHI they quote for the ages they are studying is 15.5 [2], this criterion likely does not include a significant proportion of the population that the trial claims to study. These are the patients that the guidelines they recommend changing apply to most.

The baseline measurements were taken the night before surgery, which are unlikely to be representative of the patients’ usual sleep habits. We could not identify from the manuscript if these patients were undergoing elective or...
emergency hip arthroplasty, and this could clearly affect a number of factors, including the pre-operative night's sleep.

The study claims to be triple-blinded. The Encyclopedia of Research Design [3] defines these as "randomized experiments in which the treatment or intervention is unknown to (a) the research participant, (b) the individual(s) who administer the treatment or intervention, and (c) the individual(s) who assess the outcomes". The authors have named numerous individuals who were blinded to the study: "patients, nursing staff, research team, the sleep technician and the sleep physician"; however, it does not include the "individual(s) who administer the treatment or intervention" – the anaesthetist. We acknowledge that this would pose practical difficulties but would suggest that this trial is at best double-blinded.

Finally, is the AHI the endpoint we should be measuring in these patients? How does the number of apnoeic events actually affect the postoperative outcome in this group of patients? It would have been interesting to investigate pulmonary or peri-operative complications, which are known to be increased in this group [4], and review the effect of short-acting agents with regard to this. This may have added more weight to the conclusion of the study, if a difference was seen.

Anaesthesia for patients with obstructive sleep apnoea should be patient-directed and not drug-directed

We read with great interest the work by Albrecht et al. [1]. The authors conclude that the intra-operative use of short-acting anaesthetic agents or standard agents in obstructive sleep apnoea (OSA) patients is associated with similar postoperative alteration in the apnoea-hypopnoea index. The results of this well designed study provide new and important information. We fully agree with the authors that, in light of these results, the next guideline update should take these data into account.

Nevertheless, we believe that this study has several limitations. Firstly, it included mostly patients with mild or moderate OSA. Only severe OSA patients (apnoea-hypopnoea index > 30 events per hour) experience a higher rate of postoperative complications [2, 3]. Hence, it would be interesting to repeat this study in patients with severe OSA. Secondly, all patients underwent hip arthroplasty, a moderately painful surgical procedure, and received morphine postoperatively. Such postoperative administration of opioids could neutralise the potential benefits of short-acting agents, as highlighted by the authors. Hence, caution should be used when extrapolating the results of the study to less painful procedures. Also, including peripheral nerve blocks in the multimodal analgesia protocol could have altered the results of this study. Thirdly, rather than using mean values, it would be interesting to know how many patients experienced a worsening of apnoea-hypopnoea index and the magnitude of that.

Although we congratulate Albrecht et al. for this excellent and useful study, we feel that caution should be used before extrapolating their conclusions to other clinical settings.

E. Deflandre
Clinique Saint-Luc de Bouge, Namur, Belgium
Email: eric.deflandre@gmail.com

R. Carrington
J. Waiting
The Royal London Hospital, Barts Health NHS Trust, London, UK
Email: ruby.carrington@doctors.org.uk

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