Reviewer’s report

Title: No evidence of enhanced oxidant production in blood obtained from patients with obstructive sleep apnea

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This paper assesses whether patients with obstructive sleep apnea syndrome (oSAS) suffer from oxidant/antioxidant imbalance in blood. The patient selection and other methodological carefully comprise possible flaws in other studies on this subject particularly in respect to the correct matching of the control group. Therefore, this article is important to those with closely related with this subject and challenges the hypothesis of an imbalance of the oxidant/antioxidant system in oSAS (Hatipoglu, Rubinstein, Respiration 70, 2003).

Major Compulsory revisions
None

Minor Essential Revisions
None

Discretionary Revisions
Regarding ROS, lack of any significant finding between oSAS groups and control patients particularly amazes because many other publications state otherwise. ROS in oSAS has been reported to induce cardiovascular morbidity as well as increased mortality (Gozal Am.J.Respir.Crit. Care Med. 177, 2008; Suzuki et al Free Radic.Biol.Med. 40, 2006). It seems rational that oSAS with low AHI may not differ from normals. But severe oSAS can certainly impair the oxidant/antioxidant system once chronic intermittent hypoxia is known to active the systemic ROS signalling system (Prabhakar et al Antioxid.Redox Signal. 9, 2007). Table 4 shows that oSAS as well as cPAPA-oSAS patients have in many parameters elevated chemiluminescence levels compared to controls. These might have become significantly different if the authors investigated a higher number of oSAS patients with high AHI. Choosing just 11 patients with high AHI simply might not be enough.

On what bases did the authors calculate their patient number and number of controls? Did they perform a pre-study power calculation how many patients they need to show a difference between groups?

Comparing table 2 with 2. para, page 4, the text should also state that COPD patients had been excluded once the same group demonstrated in the ERJ elevated hydrogen peroxide levels in exhaled breath condensate in these patients which might have compromised the results in this study.
**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.