Title: Neutrophil ROS production in obese and non-obese men with different severity of obstructive sleep apnoea

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Body: Obstructive sleep apnoea (OSA) is characterized by pauses of breathing during sleep followed by hypoxia/re-oxygenation circles that increase production of reactive oxygen species (ROS). Literature data are controversial regarding obesity impact on generation of ROS in OSA. The aim was to evaluate neutrophil ROS production in obese and non-obese men with different severity of OSA. Methods: 40 newly diagnosed men with OSA having no actively treated comorbidities were included. OSA was confirmed by whole-night polysomnography (PSG), when apnoea/hypopnea index (AHI) was >5/h. Body mass index (BMI) was calculated. Blood samples were taken in the morning after PSG. Neutrophils were isolated by high density centrifugation. DHR-123 was used for detection of generated ROS. ROS production was measured by mean fluorescence intensity (MFI) using flow cytometer. All subjects were divided into 4 groups: AHI<30 and BMI<30; AHI<30 and BMI≥30; AHI≥30 and BMI<30; AHI≥30 and BMI≥30. Differences were evaluated using nonparametric tests. Results: All groups were age matched. There was no difference in BMI among AHI<30 and AHI≥30 groups. Neutrophil ROS production was higher in AHI≥30 and BMI<30 group than AHI<30 and BMI<30 (MFI 143.3±39.9 vs 31.8±8.37, p<0.05) and in AHI≥30 and BMI≥30 group than AHI<30 and BMI≥30 (MFI 88.7±18.9 vs 21.3±6.0, p<0.05), but did not differ in the groups with different BMI and the same severity of OSA. Conclusion: Neutrophil ROS production was higher in severe OSA groups compared to mild-to-moderate OSA, but did not differ in obese and non-obese patient groups with the same severity of OSA. Increased neutrophil ROS production probably is related to intermittent hypoxia.