Title: Adipokines in obese children and adolescents with sleep-disordered breathing

Dr. Kim 27707 Van Hoorenbeeck kim.vanhoorenbeeck@ua.ac.be MD 1, Dr. Hilde 27708 Franckx hilde.franckx@zeepreventorium.be MD 2, Dr. Patrick 27709 Debode patrick.debode@zeepreventorium.be MD 2, Prof. Luc 27710 Van Gaal luc.van.gaal@uza.be MD 1, Prof. Kristine 27711 Desager kristine.desager@uza.be MD 1, Prof. Wilfried 27713 De Backer wilfried.de.backer@uza.be MD 1 and Dr. Stijn 27716 Verhulst stijn.verhulst@ua.ac.be MD 1. 1 Laboratory of Experimental Medicine and Pediatrics, University of Antwerp, Wilrijk, Belgium and 2 Obesity Program, Zeepreventorium, De Haan, Belgium.

Body: Background: Sleep-disordered breathing (SDB) is prevalent in obesity. It has been linked to the metabolic syndrome. Possible mechanism is intermittent hypoxia of the fat tissue and alterations of adipokine secretion. Aim: This study looked into the effects of intermittent hypoxia on adipokine levels before and after weight loss treatment. Methods: Obese children and adolescents between 10-18 years were included while entering an inpatient weight loss treatment program. All patients had 2 visits: baseline and after 4-6 months of treatment. Leptin, adiponectin, TNF-alpha and IL-6 were determined at both visits and a sleep screening was performed at baseline and repeated in case of SDB. Results: 158 patients participated in this study. Median age was 15.7 years (10.9-18.0). Mean BMI z-score was 2.75+/-0.42. 26% of participants had SDB at baseline. Mean nocturnal saturation correlated with leptin (r=0.19; P=0.02) and adiponectin (r=-0.17; P=0.04). IL-6 correlated with oxygen desaturation index (r=-0.20; P=0.02). TNF-alpha levels were not linked to sleep parameters. After weight loss 19% of subjects with SDB at baseline that participated in the follow-up study had residual SDB. Average weight loss was 29%. Correlation analysis did not show associations between improvements in sleep parameters and improvements in adipokines. These were mostly linked to a lowering in BMI z-score. Conclusion: In an obese pediatric population SDB was linked to changes in the secretion profile of leptin, adiponectin and IL-6. After weight loss treatment levels of leptine, adiponectin, IL-6 and TNF-alpha did not improve in association with improvements in sleep parameters.