

## A Case of Obstructive Sleep Apnea Syndrome, whose Sole Complaint of Night Sweat was Eliminated with Continuous Positive Airway Pressure

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### Abstract

A 69-year-old non-obese Japanese man with obstructive sleep apnea syndrome (OSAS) complaining solely about night sweat was treated successfully with continuous positive airway pressure. Nocturnal sweating of a common symptom of OSAS is also caused by drugs/alcohol/heroin, malignancies, infections, gastro-esophageal reflux, and endocrine/rheumatologic diseases. Family physicians should include OSAS in the differential diagnosis of this symptom.

**Keywords:** Continuous positive airway pressure (CPAP); Diaphoresis; Night sweat; Obstructive sleep apnea syndrome; Restless leg syndrome

### Introduction

Nocturnal drenching sweats requiring the person to change bedclothes occur in healthy persons with anxiety, hormonal imbalances of pregnancy/menopause and the inappropriate circumstances. Ten percent of older patients attended by family physicians are bothered by this symptom, which must adversely affect the quality of their lives [1]. Night sweat is caused by drugs/alcohol/heroin, malignancies, infections, gastro-esophageal reflux, endocrine/rheumatologic diseases and obstructive sleep apnea syndrome (OSAS) [2-5].

In a pediatric OSAS patient, an affected child with night sweat is likely to be hyperactive, have frequent temper outbursts and show sleep-related respiratory symptoms often suggesting upper airway obstruction due to the hypertrophic tonsil [6]. In an adult OSAS patient, especially in the geriatric population, night sweat is localized in the neck or upper body [7], ameliorated with improved sleeping circumstances (regular use of an air-conditioner, a change in lifestyle) and, therefore, overlooked occasionally by family physicians.

Here we have presented a Japanese patient with SAS, whose sole complaint of night sweat was eliminated with CPAP.

### Case Report

A 69-year-old Japanese man, the owner of a musical instrument company (170 cm, 68 kg) visited our clinic with a sole and longtime complaint of night sweat in the neck and upper body, which had required him to change bedclothes two or three times per night. He habitually used an air-conditioner at night throughout the year and slept alone.

He did not smoke or drink alcohol, and his family history was not remarkable. He had been treated for hypertension, diabetes mellitus

and hyperlipidemia. Although he did not have daytime sleepiness without taking a nap, in our interview his wife disclosed the frequent interruptions of snoring during sleep. Regarding the night sweat, he had often consulted his family physicians, however, no pathologies generating nocturnal sweating such as malignancies, infections, gastro-esophageal reflux or endocrine/rheumatologic diseases had been revealed.

The physical examinations were unremarkable with blood pressure of 146/82 mmHg. His chest X-ray, electrocardiogram and echocardiography were normal. Blood tests including serum concentrations of brain natriuretic peptide, atrial natriuretic peptide, and thyroid hormones were all within normal ranges.

Polysomnography was performed (Alice 4, Healthdyne, Atlanta, GA), while an electroencephalogram, electrooculogram, submental electromyogram, bilateral anterior tibialis electromyograms and electrocardiogram continuously recorded his status. His respiration was monitored with chest and abdominal inductive plethysmography, oro-nasal thermistors and a finger pulse-oximeter. His sleep stages were scored according to the standard criteria proposed by Rechtschaffen and Kales [8]. Apnea was defined as the cessation of airflow for >10 seconds, and hypopnea was defined as a >50% reduction in airflow for >10 seconds in addition to oxygen desaturation of >3%.

As the results, the number of episodes of apnea/hypopnea per night was 359, the apnea/hypopnea index (AHI) was 56.0 (obstructive=40.3, central=1.1, mixed=0.6, hypopnea=14.0), the arousal index was 47.9, and the mean/nadir nocturnal arterial oxygen saturation (SpO<sub>2</sub>) was 93/70 (%). There were no periodic bursts in the anterior tibialis electromyogram accompanied with leg movements or arousals. All of these findings led us to diagnose him as OSAS.

On the first night with the CPAP treatment (Solo LX, Respironics Inc., Murrysville, PA) with the pressure of 10 cm H<sub>2</sub>O during sleep, his night sweat was eliminated instantaneously and disappeared thereafter. After years of CPAP therapy of 6-7 hours per night with an average nightly AHI below 2.0, the patient's physical condition had become satisfactory.

## Discussion

Night sweat (diaphoresis), adversely affecting the quality not only of the patients' but also bed partners' lives, is generated by drug side-effects, alcohol/heroin abuse, malignancies, infections, gastro-esophageal reflux, and endocrine/rheumatologic diseases [2]. Among family physicians, these causative pathologies are excluded first, and sleep disorder is to be diagnosed, when this symptom still exists after adjusting therapies and normalizing sleeping circumstances and lifestyle. OSAS and restless leg syndrome are major such diseases that can cause arousals with night sweat [3].

In their recent epidemiologic study, Arnardottir et al. revealed frequent night sweat (more than 3 times per week) in 30.6% of male and 33.3% of female OSAS patients compared with 9.3% of men and 12.4% of women in the general population, the difference of which remained significant after adjustment of demographic factors [9]. They also showed CPAP (more than 4 hours, five days per week) helped this symptom subside in their patients.

In this case report, his intractable nocturnal sweating was eliminated with CPAP and, hence, the causative relationship of OSAS and night sweat could be assumed. Intermittent episodes of hypoxemia, arousal and subsequent activation of sympathetic nervous system, gastro-esophageal reflux or surges in blood pressure at night might be responsible [10,11].

To summarize, a male OSAS patient complaining solely about night sweat was treated successfully with CPAP. Family physicians should include OSAS in differential diagnosis of night sweat.

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