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Case Vignette:
OSA and Assessment of Fitness for Work

Presenting Complaints

A 36-year-old man of Southeast Asian descent who was an employee of a multinational corporation, presented to the emergency department of a hospital with the help of the company health officer. The patient had caused a vehicle accident while he was driving on the premises of the worksite, a shipyard, by crashing into a concrete wall after colliding with a motorcycle parked on the street.

The accident was minor, but he was unconscious at the time of the accident, and he recovered consciousness only after a worker at the site knocked on the window approximately 5 min after the accident. He had been wearing his safety belt, and, according to the statement of a worker who witnessed the accident, he was driving at a speed of ≤ 30 km/h, which is the speed limit on the premises.

Past History

He stated that he has a H/O hypertension for a year and was on medication. No other notable medical history. He did not smoke or drink**.**

Physical Exam

Patient had mild tenderness in the right upper arm. But he had no memory of the period immediately before and after the accident. The results of a blood test, radiography of the right upper arm, and brain computed tomography (CT) did not reveal any abnormalities. The patient refused to undergo a more detailed examination to determine the cause of his loss of consciousness (LOC), and he was discharged without further treatment.

His company referred him to the Department of Occupational and Environmental Medicine of the local hospital for an assessment of fitness for work.
All tests were normal. Urine examination as well as electrocardiography did not reveal any abnormalities.
Baseline physical characteristics were as follows:

- Blood pressure: 145/95 mmHg
- Axillary body temperature: 97.7°F
- BMI: 34.6 kg/m^2

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Testing

A blood test, peripheral blood smear examination (PBS), urine test, electrocardiography, and treadmill test were conducted to detect any possible medical condition that may have been the cause of LOC.

Electroencephalography (EEG) and temporal lobe epilepsy magnetic resonance imaging (TLE-MRI) were performed to detect any possible neurological cause of LOC. The EEG and TLE-MRI readings did not reveal any abnormalities that were likely to cause epilepsy or syncope, but there was a short sleep latency on the EEG result which prompted the attending physician to inquire about his sleep habits. The patient revealed that he usually went to bed between 11 and 12 p.m. and woke up at around 6 a.m. He admitted that his wife complained about his snoring, and he used to hold his breath during sleep and subsequently needed to gasp for breath. He worked 9 hours a day, but took a nap for 20–30 min to prevent sleepiness in the afternoon hours after lunch.

The physician asked him to complete both the STOP-Bang and Epworth Sleepiness Questionnaire to assess his current status.

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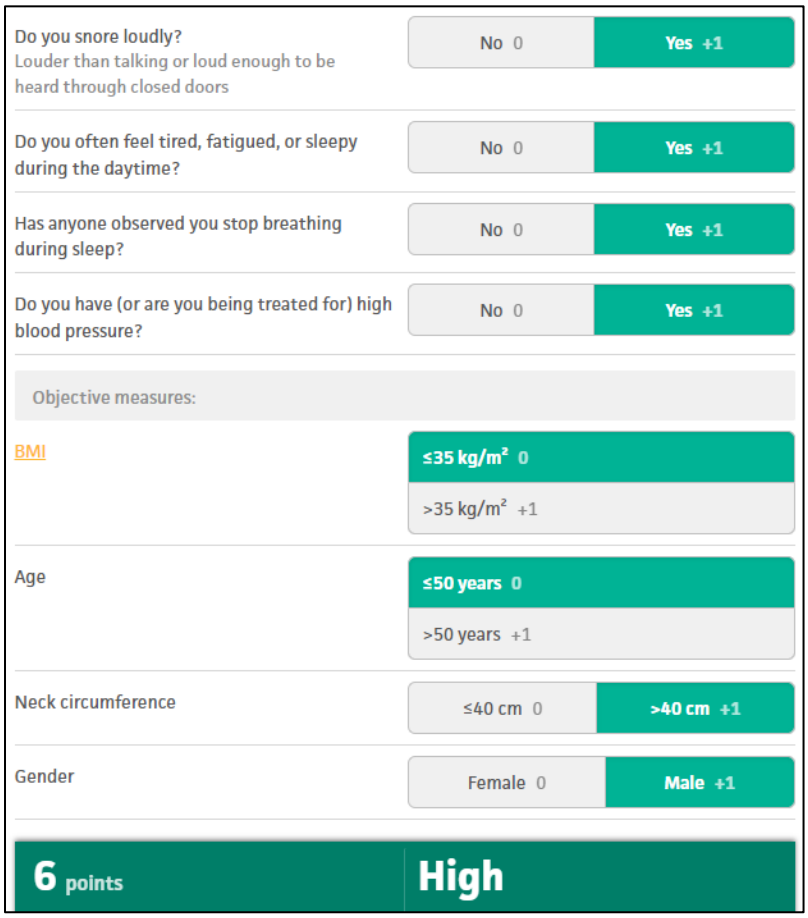

Figure 1. STOP-BANG Score

The patient had a total score of 6, (Figure 1) consistent with a high risk for OSA. [about the STOP-Bang]

To assess the patient's sleepiness, the physician asked the patient to complete an ESS.

The ESS subjectively assesses excessive daytime sleepiness by asking patients to rate their chance of dozing off from 0 (would never doze) to 3 (high chance of dozing) for 8 commonly encountered scenarios, with a total maximal score of 24.

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Would never doze	Slight chance of dozing	Moderate chance of dozing	High chance of dozing	
○	◉	○	○	Sitting and reading
○	◉	○	○	Watching TV
○	○	◉	○	Sitting inactive in a public place (e.g. cinema or in a meeting)
○	○	◉	○	Being in a car for an hour as a passenger (without a break)
○	○	○	◉	Lying down to rest in the afternoon (when possible)
◉	○	○	○	Sitting and chatting to someone
○	○	◉	○	Sitting quietly after lunch (not having had alcohol)
○	○	◉	○	In a car when you stop in traffic for a few minutes

Calculate Score

Your Score

13

Figure 2. Epworth Sleepiness Score

The ESS score generated was 13/24 (Figure 2). A score in the range of 13-15 indicates Moderate Excessive Daytime Sleepiness.[About the ESS]

This warranted a referral to a sleep physician for a more detailed assessment. In the interim, a PSG was performed.

The PSG yielded the following results: sleep latency, 25 min; sleep efficiency, 88.6%; total sleep time, 388.5 minutes out of a total recording time of 438.5 minutes. Frequent respiratory events and arousals were observed when he was sleeping in a supine position, but these were rare when he slept in a lateral decubitus position. Particularly, the respiratory events increased, and the recorded minimum blood oxygen saturation was 70% in REM sleep. The apnea-hypopnea index (AHI) was measured as 84.5, indicating severe sleep apnea.

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Discussion of Treatment Plan

On the basis of the results of the interview and tests, it was concluded that it was very likely that the accident was caused because of excessive daytimes sleepiness due to OSA while the patient was driving. The patient was prescribed CPAP therapy.

Outcome of Case

It was recommended that the patient resume working only after the AHI score reduction and improvement in his subjective symptoms.

Teaching Points

Given that untreated OSA among the working-age adult population is a disease that can become an enormous public health burden, greater interest and support of health authorities are necessary for the diagnosis and treatment of this disorder.

This case report highlighted that occupational and environmental medicine physicians can play a vital role in conducting special medical examinations of high-risk workers with OSA and in the preparation of assessment guidelines.

Adapted from: Hong S, Kim Y, Ryu JY, Lee S, Son BC, Lee CK, Kim DH. A case of obstructive sleep apnea and assessments of fitness for work. Ann Occup Environ Med. 2014 Apr 25;26:7. doi: 10.1186/2052-4374-26-7. PMID: 24822091; PMCID: PMC4017773.

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Additional Reading

- Argel M, Cunha Â, Conceição M, Abrantes T, Torres AS. Screening for Obstructive Sleep Apnea in truck drivers. Cien Saude Colet. 2023 Jun;28(6):1863-1872. doi: 10.1590/1413-81232023286.16022022. Epub 2022 Nov 17. PMID: 37255162.
- Huhta R, Hirvonen K, Partinen M. Prevalence of sleep apnea and daytime sleepiness in professional truck drivers. Sleep Med. 2021 May;81:136-143. doi: 10.1016/j.sleep.2021.02.023. Epub 2021 Feb 16. PMID: 33676284.
- Pocobelli G, Akosile MA, Hansen RN, Eavey J, Wellman RD, Johnson RL, Carls G, Bron M, Dublin S. Obstructive sleep apnea and risk of motor vehicle accident. Sleep Med. 2021 Sep;85:196-203. doi: 10.1016/j.sleep.2021.07.019. Epub 2021 Jul 17. PMID: 34348205.
- Morsy NE, Farrag NS, Zaki NFW, Badawy AY, Abdelhafez SA, El-Gilany AH, El Shafey MM, Pandi-Perumal SR, Spence DW, BaHammam AS. Obstructive sleep apnea: personal, societal, public health, and legal implications. Rev Environ Health. 2019 Jun 26;34(2):153-169. doi: 10.1515/reveh-2018-0068. PMID: 31085749.
- Findley L, Smith C, Hooper J, Dineen M, Suratt PM. Treatment with nasal CPAP decreases automobile accidents in patients with sleep apnea. Am J Respir Crit Care Med. 2000 Mar;161(3 Pt 1):857-9. doi: 10.1164/ajrccm.161.3.9812154. PMID: 10712333.

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