Count on Sleep | Obstructive Sleep Apnea Awareness

Case Vignette: OSA and Hemorrhagic Stroke

Presenting Complaints

A 32-year-old Chinese man presented to the emergency department at 3 AM, with weakness and inability to walk, resulting in a fall. His symptoms began as a sudden onset of left-sided headache, which started four hours earlier during sexual intercourse. Following this, he developed right-sided weakness, facial droop and two episodes of vomiting. The weakness worsened over four hours , resulting in an inability to walk, which subsequently led to a fall.

Past History

The patient does not smoke or use alcohol. His wife reported that his usual sleep period was 11:30 pm to 7 am. The patient's medical history was unremarkable, and he was taking no medications. His wife casually mentioned that her husband has been taking afternoon naps a few times a week since he works remotely.

Physical Exam

A healthy young male. Pupils were symmetric and equally reactive to light. The extra-ocular muscles' range of movement was normal, without nystagmus. Motor strength on the left was 5/5 in both upper and lower extremities. The best motor strength in the right upper extremity was 2/5, while in the lower extremity it was 1/5. Deep tendon reflexes were within normal limits on the left and increased for the right extremities.

Blood investigations were unremarkable. Cardiac cause was excluded based on normal electrocardiogram, 24-hour Holter monitoring and echocardiogram.

- Current weight of 158 lb. (BMI of 23.3 kg/m^2).
- Blood pressure (BP) was 135/93 mm Hg.
- Glasgow Coma Scale score was 11/15 [E4V1M6].

Testing

On computed tomography (CT) imaging of the head and subsequent magnetic resonance imaging (MRI) of the brain there was evidence of an acute hemorrhage in the left basal ganglia with mild perilesional edema, without midline shift. On day three, CT angiogram of the circle of Willis was performed, where an aneurysm or arteriovenous malformation were not present.

Further investigations for additional causes of secondary hypertension were non-contributory. The patient was observed in the hospital for several days and his BP remained well controlled while taking 5mg of Amlodipine. However, during sleep, oximetry drops were noted.

His physician then administered the Epworth Sleepiness Scale (ESS) tool.

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.

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

11

Figure 1. Epworth Sleepiness Score results

The ESS score generated was 11/24 (Figure 1). A score in the range of 11-12 is interpreted as Mild Excessive Daytime Sleepiness.[About the ESS]

Given his oximetry drops and excessive daytime sleepiness, an in-hospital sleep test was performed (Polysomnography).

Test results:
The sleep study was consistent with moderate sleep apnea, characterized by an apnea hypopnea index (AHI) of 15.

Discussion of Treatment Plan

Continuous Positive Airway Pressure (CPAP) is the most commonly used treatment to lower the risk of further adverse outcomes due to OSA after stroke. A CPAP treatment trial was initiated while the patient was in the hospital.

Outcome of Case

Unfortunately, the patient did not tolerate the trial of CPAP. He said that his facial paresis prevented proper fit of the CPAP mask. He was discharged home without it but was strongly advised to see a sleep physician for alternative therapies. In the interim, he was recommended positional therapy, including the use of body positioners to prevent supine sleep, as well as elevating the head of the bed.

Teaching Points

Determining the cause of stroke is essential in order to implement a treatment plan to reduce a patient's risk of a subsequent adverse events. However, 25% to 40% of strokes are cryptogenic, in which the stroke etiology remains unknown or there are multiple, equally likely mechanisms. OSA should not be overlooked as a cause for stroke.

Compared with people of European origin, Asians have a similar prevalence of OSA, but at a much lower average BMI, possibly due to a smaller craniofacial structure . Thus OSA should be suspected even in absence of an elevated BMI. Untreated OSA and high BP precipitated by sexual intercourse presumably led to increased intracranial pressure and bleeding in the patient.

This case highlights the need to keep in mind that OSA may cause hemorrhagic stroke and thus physicians should consider obtaining sleep apnea testing for unexplained hemorrhagic stroke or in patients at risk of stroke. There are multiple mechanisms possible for OSA relation to stroke. These include endothelial damage from inflammatory chemicals, platelet aggregation & coagulopathies, sympathetic nervous system stimulation and chronically damaging brain parenchyma from repetitive hypoxia.

Additional Reading

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