CASE ONE

Short case number: 3_10_1
Category: Respiratory System
Discipline: Medicine
Setting: General Practice
Topic: Sleep apnoea syndrome

Case

Laurie Tay, aged 52 years presents to your general practice complaining of fatigue. Recently he has fallen asleep at work during a meeting and was embarrassed. He states that he feels he needs to lie down most afternoons to have a rest if possible. A few days ago he fell asleep at the traffic lights and was beeped at by cars. You know doesn't smoke and is happily married and works as an account manager in a major bank. However, his weight has increased over the past few years and he is now obese with a body mass index of 32.

Questions

1. What further history and examination would you undertake?
2. What investigations would you order in this case?
3. How does sleep apnoea syndrome typically present?
4. Summarise the Epworth Sleepiness Scale.
5. What is the differential diagnosis of sleep apnoea syndrome?
6. How do you manage sleep apnoea syndrome?
7. How are overnight oxygen saturation traces used in the diagnosis of sleep apnoea syndrome?

Suggested reading:

- Colledge NR, Walker BR, Ralston SH, Penman ID, editors. Davidson's Principles and Practice of Medicine. 22nd edition. Edinburgh: Churchill Livingstone; 2014. Chapter 19.

ANSWERS

THE SLEEP APNOEA/HYPOPNOEA SYNDROME

2-4% of the middle-aged population suffer from recurrent upper airway obstruction during sleep. Due to the daytime sleepiness, especially in monotonous situations, and this results in a threefold increased risk of road traffic accidents and a ninefold increased risk of single-vehicle accidents.

1. What further history and examination would you take?

Excessive daytime sleepiness is the principal symptom and snoring is virtually universal. The patient usually feels that he or she has been asleep all night but wakes unrefreshed. Bed partners report loud snoring in all body positions and will often have noticed multiple breathing pauses (apnoeas). Difficulty with concentration, impaired cognitive function and work performance, memory loss, depression, irritability, impotence and nocturia are other features. In examination, look for associated clinical features of obesity, hypertension and heart failure.

2. What investigations would you order in this case?

Provided that the sleepiness does not result from inadequate time in bed or from shift work etc., any person who repeatedly falls asleep during the day when not in bed, who complains that his or her work is impaired by sleepiness, or who is a habitual snorer with multiple witnessed apnoeas should be referred to a sleep or respiratory specialist.

EPWORTH SLEEPINESS SCALE
A more quantitative assessment of daytime sleepiness can be obtained by questionnaire. (See Q4)

Overnight studies
Overnight studies of breathing, oxygenation and sleep quality (polysomnography) are diagnostic but the level of complexity of investigations will vary depending on the probability of diagnosis, differential diagnosis and resources. The current threshold for diagnosing the sleep apnoea/hypopnoea syndrome is 15 apnoeas/hypopnoeas per hour of sleep, where an apnoea is a 10-second or longer breathing pause and a hypopnoea a 10-second or longer 50% reduction in breathing.

3. How does sleep apnoea syndrome typically present?

Excessive daytime sleepiness is the principal symptom and snoring is virtually universal. (Difficulty with concentration, impaired cognitive function and work performance, depression, irritability and nocturia are other features).

4. Summarise the Epworth Sleepiness Scale.

How likely are you to doze off or fall asleep in the situations described below? Use the following scale to choose the most appropriate number for each situation:
0 = would never doze
1 = slight chance of dozing
2 = moderate chance of dozing
3 = high chance of dozing

- Sitting and reading
- Watching TV
- Sitting, inactive in a public place (e.g. a theatre or a meeting)
- As a passenger in a car for an hour without a break
- Lying down to rest in the afternoon when circumstances permit
- Sitting and talking to someone
- Sitting quietly after a lunch without alcohol
- In a car, while stopped for a few minutes in the traffic

Normal subjects average 5.9 (SD 2.2) and patients with severe obstructive sleep apnoea average 16.0 (SD 4.4)

5. What is the differential diagnosis of sleep apnoea syndrome?

Narcolepsy is a rare cause of sleepiness, occurring in 0.05% of the population, and is associated with cataplexy (when muscle tone is lost in fully conscious people in response to emotional triggers), hypnagogic hallucinations (hallucinations at sleep onset) and sleep paralysis. Idiopathic hypersomnolence occurs in younger individuals and is characterised by long nocturnal sleeps.

Lack of sleep

- Inadequate time in bed
- Extraneous sleep disruption (e.g. babies/children)
- Shift work
- Excessive caffeine intake
- Physical illness (e.g. pain)

Sleep disruption

- Sleep apnoea/hypopnoea syndrome
- Periodic limb movement disorder (recurrent limb movements during non-REM sleep, frequent nocturnal awakenings)

Sleepiness with relatively normal sleep

- Narcolepsy
- Idiopathic hypersomnolence (rare)
- Neurological lesions (e.g. hypothalamic or upper brain-stem infarcts or tumours)
- Drugs

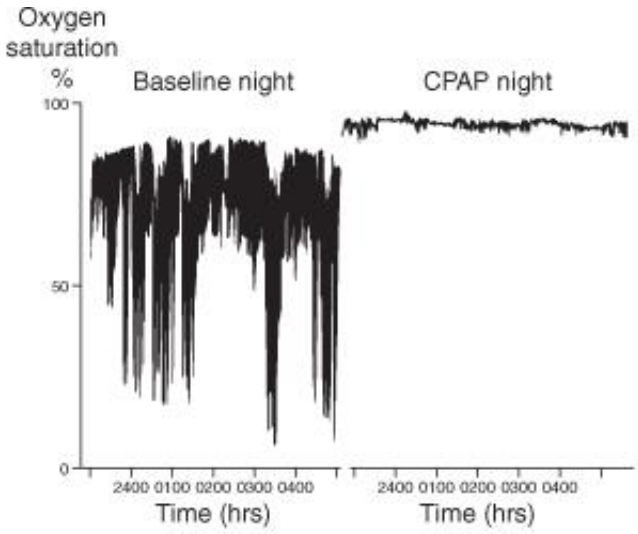
Psychological/psychiatric

- Depression

6. How do you manage sleep apnoea syndrome?

- In some patients, advice to avoid evening alcohol and lose weight suffices
- most need to use continuous positive airway pressure (CPAP) delivered by a nasal mask every night at home. CPAP keeps the throat open by keeping the upper airway pressure above atmospheric. The effect is often dramatic and CPAP results in improvements in symptoms, daytime performance, quality of life and survival.
- Unfortunately, 30-50% of patients are poorly compliant or do not tolerate such therapy.
- Mandibular advancement devices worn within the mouth are an alternative approach which is effective in some patients.
- There is no evidence that palatal surgery has any role in the management of this condition, but surgical treatment of nasal obstruction may be helpful.

7. How are overnight oxygen saturation traces used in the diagnosis of sleep apnoea syndrome?



Overnight oxygen saturation trace. It helps in both diagnosing and managing sleep apnoea syndrome. In the above example, the left-hand panel shows the trace of a 46-year-old patient during a night when he slept without CPAP and had 53 apnoeas plus hypopnoeas/hour and marked oxygen desaturation. The right-hand panel shows the next night when he slept with a CPAP of 10 cm H_2O delivered through a tight-fitting nasal mask which abolished his breathing irregularity and awakenings and improved his oxygenation.