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Obstructive Sleep Apnoea Syndrome (Causes, Symptoms, and Treatment)

If you have obstructive sleep apnoea syndrome you have many periods when your breathing stops for 10 seconds or more when you sleep. You wake up briefly after each episode of stopped breathing to start breathing again. You do not usually remember the times you briefly wake up but you have a disturbed night's sleep. As a result, you feel sleepy during the day. A typical person with this condition is overweight, male and middle-aged, and snores loudly. However, it can affect anyone. Sleep apnoea treatment usually works well.

What is sleep apnoea?

Sleep apnoea, or obstructive sleep apnoea syndrome (OSAS), is a condition where your breathing stops for short spells when you are asleep. The word apnoea means without breath - that is, the breathing stops. In the case of sleep apnoea, the breathing stops because of an obstruction to the flow of air down your airway. The obstruction to the airflow occurs in the throat at the top of the airway.

You may also have episodes where your breathing becomes abnormally slow and shallow. This is called hypopnoea. Because there can also be these episodes of hypopnoea, doctors sometimes use the term 'obstructive sleep apnoea/hypopnoea syndrome'.

What causes sleep apnoea?

When we sleep, the throat muscles relax and become floppy (like other muscles). In most people, this does not affect breathing. If you have sleep apnoea, your throat muscles become so relaxed and floppy during sleep that they cause a narrowing or even a complete blockage of your airway.

When your airway is narrowed and the airflow is restricted, at first this causes snoring. If there is a complete blockage then your breathing actually stops (apnoea) for around 10 seconds. Your blood oxygen level then goes down and this is detected by your brain. Your brain then tells you to wake up and you make an extra effort to breathe. Then, you start to breathe again with a few deep breaths. You will normally go back off to sleep again quickly and will not even be aware that you have woken up.

Sometimes, the airway can just partially collapse and can lead to hypopnoea. Breathing becomes abnormally slow and shallow. If this happens, the amount of oxygen that is taken into your body can be halved. Hypopnoea episodes also usually last for around 10 seconds.

If someone watches you, he or she will notice that you stop breathing for a short time and then make a loud snore and a snort. You might even sound as if you are suddenly choking, briefly wake up and then get straight back off to sleep.

It is quite common for many of us to have the odd episode of apnoea when we are asleep, often finishing with a snort. This is of no concern. In fact, some people when they sleep have periods of 10-20 seconds when they do not breathe. However, people with sleep apnoea have many such episodes during the night. For the diagnosis of sleep apnoea, you need to have at least five episodes of apnoea, hypopnoea, or both events per hour of sleep. However, there are different levels of severity of sleep apnoea (mild, moderate or severe). People with severe sleep apnoea can have hundreds of episodes of apnoea each night.

Obstructive sleep apnoea syndrome is usually classified as:

- Mild sleep apnoea - between 5-14 episodes an hour.
- Moderate sleep apnoea - between 15-30 episodes an hour.
- Severe sleep apnoea - more than 30 episodes an hour.

So, if you have sleep apnoea, you wake up many times during the night. You will not remember most of these times but your sleep will have been greatly disturbed. As a consequence, you will usually feel sleepy during the day. Daytime sleepiness in someone who is a loud snorer at night is the classic hallmark of someone who has sleep apnoea.

Who gets sleep apnoea?

Obstructive sleep apnoea syndrome can occur at any age, including in children. It most commonly develops in middle-aged men who are overweight or obese, although it can affect people who are not overweight. It is thought that as many as 4 in 100 middle-aged men and 2 in 100 middle-aged women develop sleep apnoea.

Factors that increase the risk of developing sleep apnoea or can make it worse include the following. They all increase the tendency of the narrowing in the throat at night to be worse than normal.

- Being overweight or obese, particularly if you have a thick neck, as the extra fat in the neck can squash your airway.

- Drinking alcohol in the evening. Alcohol relaxes muscles more than usual and makes the brain less responsive to an episode of apnoea. This may lead to more severe apnoea episodes in people who may otherwise have mild sleep apnoea.
- Enlarged tonsils.
- Taking sedative medicines such as sleeping tablets or tranquilisers.
- Sleeping on your back rather than on your side.
- Having a small or receding lower jaw (a jaw that is set back further than normal).
- Smoking.

You may also have a family history of sleep apnoea.

Sleep apnoea in children

Obstructive sleep apnoea syndrome is common in children, especially in preschool children. The peak age is 3-6 years, which is the same time as the growth of the adenoids and tonsils.

Sleep apnoea in children may get better without treatment, especially in children with mild sleep apnoea and enlarged tonsils and adenoids. Sleep apnoea in children with enlarged tonsils and adenoids often improves if the tonsils and adenoids are removed. Sleep apnoea is more likely to persist if your child is overweight (obese), is a boy or if the sleep apnoea is severe.

Sleep apnoea symptoms

People with obstructive sleep apnoea syndrome may not be aware that they have this problem, as they do not usually remember the waking times at night. It is often a sleeping partner or a parent of a child with sleep apnoea who is concerned about the loud snoring and the recurring episodes of apnoea that they notice.

One or more of the following also commonly occur:

- Daytime sleepiness. This is often different to just being tired. People with severe sleep apnoea may fall asleep during the day, with serious consequences. For example, when driving, especially on long monotonous journeys such as on a motorway. A particular concern is the increased frequency of car crashes involving drivers with sleep apnoea. Drivers with sleep apnoea have a 7-12 increased risk of having a car crash compared to average. You should not drive and you should not operate machinery if you feel sleepy.
- Poor concentration and mental functioning during the day. This can lead to problems at work.
- Not feeling refreshed on waking.
- Morning headaches.
- Depression.
- Being irritable during the day.

Some people with sleep apnoea find that they get up to pass urine frequently during the night. Less common sleep apnoea symptoms also include night sweats and reduced sex drive.

People with untreated sleep apnoea also have an increased risk of developing high blood pressure. Having high blood pressure can increase your risk of having a heart attack or a stroke. People with untreated sleep apnoea may also have an increased risk of developing problems with blood sugar regulation and type 2 diabetes.

How do you know if you have sleep apnoea?

Epworth Sleepiness Scale

If you have daytime tiredness, sometimes a questionnaire is used to measure where you are on the Epworth Sleepiness Scale. This helps to gauge the level of sleepiness that you feel during the daytime. A high score indicates that you may have a sleeping disorder such as sleep apnoea.

Tests to confirm sleep apnoea

If you have symptoms that suggest obstructive sleep apnoea syndrome, or a high score on the Epworth Sleepiness Scale, your GP may refer you to a specialist for tests. There are various types of test that can be done whilst you sleep. The ones done may be determined by local policies and availability of equipment. For example:

- By using a probe placed under your nose, your airflow may be measured whilst you sleep.
- A sensor may record snoring volume and body movement whilst you sleep.
- The oxygen level in your blood can be monitored by a probe clipped on to your finger.
- Breathing can be monitored and recorded by the use of special belts placed around the chest and tummy (abdomen).
- A video of you sleeping may be undertaken.

You may be asked to spend a night in hospital for the tests to be done. However, some of the tests may be done in your own home from equipment supplied by the specialist. The information gained from the tests can help a specialist to firmly diagnose or rule out sleep apnoea.

Your doctor will usually check your blood pressure. (Sleep apnoea is associated with high blood pressure.) They may also suggest other tests to exclude other causes of your sleepiness. For example, a blood test can check for an underactive thyroid gland.

Sleep apnoea treatment

General measures

Things that can make a big difference include:

- Losing some weight if you are overweight or obese.
- Not drinking alcohol for 4-6 hours before going to bed.
- Not using sedative drugs.
- Stopping smoking if you are a smoker.
- Sleeping on your side or in a semi-propped position.

Continuous positive airway pressure (CPAP machine)

This is the most effective treatment for moderate or severe obstructive sleep apnoea syndrome. It may be used to treat mild sleep apnoea if other treatments are not successful. This treatment involves wearing a mask when you sleep. A quiet electrical pump is connected to the mask to pump room air into your nose at a slight pressure. The slightly increased air pressure keeps the throat open when you are breathing at night and so prevents the blockage of airflow. The improvement with this treatment is often very good, if not dramatic.

If CPAP works (as it does in most cases) then there is an immediate improvement in sleep. Also, there is an improvement in daytime well-being, as daytime sleepiness is abolished the next day. Snoring is also reduced or stopped. The device may be cumbersome to wear at night but the benefits are usually well worth it. Comments like "I haven't slept as well for years" have been reported from some people after starting treatment with CPAP.

Lifelong treatment is needed. Sometimes you can have problems with throat irritation or dryness or bleeding inside you nose. However, newer CPAP machines tend to have a humidifier fitted which helps to reduce these problems.

Sleep apnoea mouthpieces

The mandible is the lower jaw. There are devices that you can wear inside your mouth when you sleep. They work by pulling the mandible forward a little so that your throat may not narrow as much in the night. These devices look a bit like gum shields that sportspeople wear. Although you can buy these devices without a prescription, it is best to have one properly fitted by a dentist if one is recommended. These devices can work well in some cases. They tend to be used in mild sleep apnoea or in people who are unable to tolerate CPAP treatment.

Sleep apnoea surgery

Surgery is not often used to treat sleep apnoea in adults. However, sometimes an operation may be helpful to increase the airflow into your airway. For example, if you have large tonsils or adenoids, it may help if these are removed. This is more commonly done in children with sleep apnoea. If you have any nasal blockages, an operation may help to clear the blockage. New operative techniques are being developed for people with sleep apnoea.

Other treatments for sleep apnoea

If you sleep mostly on your back then positional therapy can be beneficial. This works to prevent you from sleeping on your back. There are different ways of doing this, including the simple 'tennis ball technique' (a tennis ball is strapped to your back), alarm devices and also using a number of positional pillows to help you change your sleeping position.

Sleep apnoea syndrome - driving, and operating machinery

If you have obstructive sleep apnoea syndrome and you are a driver, you only need to inform the Driver and Vehicle Licensing Agency (DVLA) if you have symptoms of excessive daytime sleepiness. For normal car drivers, you will usually be allowed to resume driving after you have had treatment so that you no longer have daytime sleepiness. However, special rules apply if you have an LGV or similar licence.

You do not need to stop driving or inform the DVLA if you are being investigated for, or have a diagnosis of, sleep apnoea but do not experience symptoms of daytime sleepiness that are of a severity likely to impair driving.

It is also recommended that you inform the DVLA (but do not cease driving) if you are successfully using CPAP or using a mandibular advancement treatment. If your symptoms are controlled and you have no excessive daytime or awake time sleepiness then your driving licence will not be affected.

Equally, if you have daytime sleepiness, you should not operate heavy machinery, as this can also be dangerous.

Further reading & references

- Obstructive sleep apnoea/hypopnoea syndrome and obesity hypoventilation syndrome in over 16s; NICE guidance (August 2021)
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