

The treatment of obstructive sleep apnea

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Introduction

Snoring during sleep is usually talked about by people with amusement and with embarrassment by those who are afflicted by the condition. Over the last 15 years however attention has focused on a sleep disorder that frequently accompanies snoring and that constitutes a severe health risk. This is obstructive sleep apnea (OSA) - apnea means 'no breathing'. Sleep apnea, the cessation of breathing for at least 10 seconds, in itself is not abnormal. It can occur in normal sleep up to ten times a night and then only during very deep sleep. The condition becomes abnormal when there are more than 10 apneic spells per hour of sleep and/or it causes the arterial O₂ level to go down to below 85% of normal.

This paper presents an overview of what we know about OSA and how it can be treated.

Obstructive sleep apnea

The most common cause of OSA is the backward movement of the tongue and the narrowing of the upper airway by the relaxation of all neck muscles during deep sleep. Some persons have a predisposing physical condition when they have a short neck and a big tongue. It is a common condition affecting up to 10% of the population. It can affect both sexes and can occur at any age.

It is easy to tell if someone has OSA: just listen to his/her snoring and if it is followed, first by a period of silence from 10 up to 120 seconds, and then by a loud snort or a gasp, when he/she starts breathing again, you know this person has OSA. Besides the snoring interrupted by silence and gasping, there are other characteristics the person suffering from OSA presents with. They are: excessive daytime sleepiness, irritability, memory lapses, depression, high blood pressure, frequent urination during the night, morning headaches and sexual problems.

Why is OSA dangerous to your health?

OSA undermines a person's health and can become life threatening. Various mechanisms are at work that seriously affect the OSA sufferer's well being.

1. Because the amount of oxygen supplied to the body (arterial oxygen saturation) falls when the person stops breathing (apneic spells), various important organs, especially the brain and the heart, suffer. If the oxygen level goes down below a critical level, there is an increased risk of stroke or heart attack. Recent studies show that more than 50% of stroke victims have OSA!
2. Even during apneic spells, the chest muscles continue to work vigorously in an attempt to draw air in. The result is that the person will be struggling throughout the night to try and breathe. In the morning he/she will wake up exhausted and will have a hard time to get out of bed. When this occurs night after night, the OSA sufferer will develop what is called 'chronic sleep deprivation', which is the main cause of the symptoms that the patient may complain of: daytime sleepiness, chronic fatigue, and often dramatic personality changes: from mild irritability all the way to hostility and agitated depression.

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Daytime sleepiness is of course the most noted symptom, with OSA sufferers embarrassingly falling asleep in meetings, when someone is talking to them etc. The daytime sleepiness not only makes the OSA sufferer feel miserable during the day, it also puts him at risk when driving a car. Studies in Sweden have determined that OSA sufferers are 15 times more at risk of being involved in traffic accidents, not so much because they fall asleep at the wheel, but because of increased inattentiveness.

3. The nightly struggle to draw in enough air and oxygen causes a whole series of active substances, such as adrenalin, to be secreted by various organs in the body and cause acute elevation of systemic and pulmonary artery pressures during sleep. OSA sufferers will not be initially aware of this except that they might complain of frequent morning headaches. Over a period of time, the person will eventually develop hypertension (high blood pressure) constantly. Until recently it was thought that the hypertension we see in OSA sufferers could be due to other causes: obesity, heart disease, smoking, alcohol use etc. A recent study, just published in a reputed medical journal has put the doubts to rest and has found that 'sleep disordered breathing (SDB) [like OSA] is independently associated with hypertension in both men and women'. In their conclusion the authors recommend that 'a physician should consider the possibility of hypertension whenever any type of SDB is present and conversely should consider the possibility of SDB whenever hypertension is present'. The hypertension seen in OSA sufferers can be severe and difficult to control with the common anti-hypertensive drugs. In many cases, shortly after the patient has started the CPAP treatment (see below) for OSA, the hypertension will gradually come down and in some cases completely disappear.
4. Most OSA sufferers complain of having to get up several times a night to pass urine. This is caused by the release during the sleep of (natriuretic) hormones as a result of the increased arterial and pulmonary blood pressure. These hormones cause the kidneys to excrete large amount of urine to decrease the workload on the heart while it is doing extra work as a result of the OSA. In many cases, shortly after the OSA sufferer is using the constant positive air pressure (CPAP) treatment, the need to use the bathroom during the night disappears almost instantly!

How is the severity of OSA determined?

The spouse of the OSA sufferer will have a pretty good idea how severe his/her condition is, by simply listening during the night and noticing the telltale signs mentioned earlier. However, to clearly quantify the severity of OSA, the sufferer should undergo a polysomnographic study, in short, a diagnostic sleep study. Until recently such studies were the exclusive domain of large teaching hospitals, in the South Pacific region, Auckland Hospital or Sydney's Royal Prince Alfred Hospital. Fortunately, thanks to the information technology revolution and the miniaturization of many computer parts, recording equipment has now become available that allows such sleep study to be performed outside the hospital.

The PII+ Autoset is one such type of equipment that allows us to use it outside the hospital setting. With minimal discomfort to the person being studied, it will record during the 8-hour sleep a variety of facts about the person during his/her sleep. This will include the amount of snoring, the frequency and the duration of apneic incidents, the oxygen level in the blood, the heart rate and the amount of effort the person has to expend to breathe etc. The Autoset will record all this information while the person is connected to the machine by means of a nasal catheter that sits at the entry of the nostrils and an 'oximeter' that is taped to a finger. After the sleep study is completed the information can be downloaded into a computer and printed. The printouts give a full picture of the events over the up to 8-hour sleep study, but can be narrowed to a one-hour segment and a 5-minute segment. This allows the details of the

interrelationship between apnea and a decrease in arterial oxygen to be viewed in a dramatic way.

How is OSA treated?

In minor cases, the person is recommended to lose weight and to sleep on the side. However, OSA constitutes a definite health risk when arterial oxygen levels dip below 85% of normal or the frequency of apneic spells is more than 10 per hour. Once OSA has reached such intensity, it must be treated, not only because of the health risk that such degree of OSA poses but also to improve the sufferer's quality of life.

There are at present three treatment modalities available to correct OSA:

1. The surgical removal of the tonsils, adenoids and uvula as well as the soft tissues in the larynx has been offered as a permanent treatment of OSA. At the NZ Ear-Nose and Throat Surgeons' convention held in Apia last year, it was concluded that the success rate is only about 50% and that instead non-invasive treatment techniques should be resorted to first.
2. There are orthodontic devices that prevent the lower jaw to slide back during sleep, in this way preventing the tongue to move back and block the airway. Unfortunately, this works also only in about 50% of the cases and only works with people having a small tongue, which is not the case with our people.
3. The only treatment that has stood the test of time and gives a near 100% success rate is to use nasal CPAP treatment. This is what is available at 'The Samoa Sleep Clinic'. The treatment is provided thanks to a small bedside 'CPAP machine' that comes with a comfortable, lightweight nose mask that the OSA sufferer places over his/her nose at night and sleeps with.

To properly use the machine a second sleep study is required to determine the exact air pressure that is needed to overcome the obstruction. The 'treatment' sleep study is conducted in a similar way as the previous 'diagnostic' sleep study, except that now the Autoset is programmed to function as a CPAP machine. During this sleep study the OSA sufferer will become familiar with the way the CPAP treatment works and will, in the morning, feel the immediate difference compared to previous nights when he/she was struggling for air throughout the night. The printout will dramatically show that during the entire period of the study, the person's arterial oxygen level was kept normal because the constant positive air pressure constantly unblocked the airways so that the person could breath normally all the time. The printout will also show what amount of pressure is required to overcome the obstruction. This is essential to allow proper calibration of the OSA sufferer's individual CPAP machine.

Once this information is available, the person who has completed the second sleep study can have his/her individual CPAP machine calibrated then and there and can start using it that same night.

Where can you get help?

If you, your spouse, partner or friends experience any of the symptoms of OSA as mentioned above, and want to be protected from some of the more serious complications of OSA, then contact us at The Samoa Sleep Clinic. Call us at 21896 for an appointment. Consultations are discreet and privacy is guaranteed.

How expensive is it to get treated for OSA?

The Samoa Sleep Clinic offers the most advanced technology available at present for the treatment of this worrisome condition. In addition, it has a collaborative agreement with Professor Colin Sullivan of the University of Sydney School of Medicine, who pioneered the CPAP treatment more than 15 years ago, whereby we are kept informed of the latest developments in the treatment of OSA. Professor Sullivan and his staff are also available to give advice in cases for which a 'second opinion' is warranted.

People have to accept that medical equipment is not cheap, especially if it belongs to what is called 'leading-edge' (or advanced) technology. At the same time, they should know that METI, because of its 'not-for-profit organisation status', is able to offer the treatment at a much cheaper rate than if the OSA sufferer would have to find treatment overseas.

The overall 'treatment package' that is offered by METI comes to about 3500 tala (roughly US\$1200). This includes the various consultations, the two sleep studies conducted in the Samoa Sleep Clinic, the CPAP machine and the nose mask assembly. In addition, we strongly urge the person who purchases such expensive equipment to protect it against power surges and therefore to invest in a 'power surge protector', which is readily available from electrical appliance stores in town. The 'hard' statistic that the OSA sufferer must face is that once in the 50-60 year bracket, he/she is at a very high risk of developing the fatal complications of OSA.

Conclusion

Finally, there is the issue of 'quality of life'. Once the OSA sufferer makes nightly use of the CPAP treatment, life changes: he/she becomes a new person and receives a new lease on life. Whereas before the person would be dragging himself through the day, half-asleep and irritable, barely able to complete his daily work load, now, after starting the CPAP treatment –as more and more people can bear witness- he will be alert throughout the day, calm and confident of himself and able to perform work that he never thought before he would be able to cope with! Foremost, he will live his life to his full potential and will be able to make realistic plans for the future.

When a patient is faced with a medical expense related to a treatment that in many cases can prolong life by 10 or 20 years, then that person needs to answer the question: 'How much is my life worth?' or 'What is the value I am prepared to put on my life?' It then becomes a matter of coming to grips with the very deep questions that every human being must answer sometime in life: what is the purpose of this life and what can I do to preserve it.

In the end it is the OSA sufferer himself who has to decide whether he wants to improve the quality of his or her life and is prepared to put a figure on the value of that life. Some people have no problem smoking one pack of cigarettes and drinking one large bottle of Vailima a day. A simple calculation will show that such a habit will cost them over 3000 tala per year! CPAP treatment is a new and effective treatment for OSA, a potentially dangerous disease that affects those who suffer from it throughout their life.

It is hoped that once the many OSA sufferers become aware and convinced of the many benefits that such treatment can offer, they will start to prioritise their needs and will put CPAP treatment for OSA high on their individual lists.