SLEEP APNOEA SYNDROME - A STUDY OF 5 CASES

H F K Chiu, S Lee, K W Ho, C C Leung, C N Chen

ABSTRACT

Sleep apnoea syndrome (SAS) is common in the West but its prevalence is uncertain in Southeast Asia. Five Chinese patients seen in a Sleep Assessment Unit in Hong Kong are presented to illustrate the spectrum of clinical features and treatment methods involved in obstructive and central sleep apnoea. The first patient is a 45-year old woman with severe obstructive SAS and cardiopulmonary complications who improved significantly after tracheostomy. The second patient is a 43-year old man who improved with weight reduction and protriptyline. The third is a 42-year old man whose SAS did not improve with uvulopalatopharyngoplasty but with continuous positive airway pressure (CPAP). The fourth is a 12-year old girl with obstructive SAS who improved significantly after tonsillectomy. The last patient is a 52-year old man with central SAS who improved with CPAP.

Key words: Sleep apnoea, Chinese, Hong Kong.

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INTRODUCTION

The sleep apnoea syndrome (SAS) is characterized by at least 30 episodes of apnoea during seven hours of sleep. The obstructive form presents mainly as loud snoring and excessive daytime sleepiness. Less common but reported features include morning headache, intellectual deterioration, personality changes, nocturnal enuresis, abnormal motor activity during sleep, impotence[1] and even psychosis[2].

Diagnosis is confirmed by polysomnography, which simultaneously records the electroencephalograph, electromyogram, heart rate, oronasal airflow, chest and abdominal breathing movements and oxygen haemoglobin saturation. Treatment modalities include weight reduction, pharmacological agents, surgery, and nasal continuous positive airway pressure (CPAP).

Sleep Assessment Unit
Department of Psychiatry
Chinese University of Hong Kong
Prince of Wales Hospital
Shatin, Hong Kong

H F K Chiu, MRCPsych (UK)
Lecturer

S Lee, MRCPsych (UK)
Lecturer

K W Ho, RN
Senior Technician

C C Leung, RN
Technician

C N Chen, FRCPsych, FRANZCP
Professor

Correspondence to : Dr H F K Chiu

While this disorder was found to be common in the West, its prevalence is uncertain in Southeast Asia (3). Patients with loud snoring and daytime sleepiness, the two cardinal symptoms of the SAS, are often only given simple reassurance without further assessment.

This paper presents 5 cases of sleep apnoea seen in our Sleep Assessment Unit in Hong Kong to illustrate the spectrum of clinical features and treatment methods involved.

CASE REPORTS

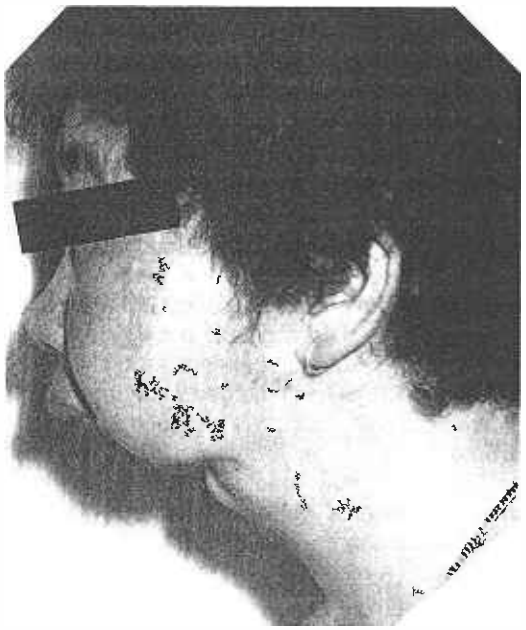
Case 1

Madam A is a 45-year old housewife with severe micrognathia due to osteomyelities at the age of 3. Since childhood she had snoring which people in the next room could hear. Five years ago, she started to have excessive daytime sleepiness. Apart from frequent dozing off in monotonous situations, she also had irresistible sleep attacks while eating or standing. She went to bed at 10 pm and fell asleep immediately. She usually slept till 7 am with two brief wakenings in the night. She had excessive bodily movements at night and occasional nocturnal enuresis. She had become more absent-minded for 2 years. She had hypertension for 3 years and was put on Navidrex K and methyldopa 250 mg tds. Three years ago, she had heart failure treated in China. She was seen by various doctors for 3 years without any definitive diagnosis until she was referred to us for suspected sleep apnoea syndrome.

On physical examination, she had severe micrognathia and other features of the Bird-like Face syndrome which consists of acquired micrognathia, periodic sleep apnoea and hypersomnolence[4] (Fig 1). She was 18.5 kg above her ideal body weight and had mild cyanosis. Investigations showed that she was polycythaemic, with a haemogbolin level of 19.2 g/dl (Normal 11.5 - 14.3 g/dl), cardiomegaly and evidence of pulmonary hypertension. Overnight polysomnograhy showed an apnoea index (number of apneic episodes per hour of

sleep) of 133 with the longest duration of apnoea lasting 114 seconds. The predominant type of apnoea was obstructive and the lowest oxygen saturation (SaO_2) record was 13% (This may represent a technical error as oximetry is not accurate below 50% SaO_2). Her sleep architecture was severely disrupted with only Stage 1 sleep and no slow wave sleep (SWS ie. Stage 3 and 4). Sleep-onset REM episodes (REM sleep occurring within the first 15 minutes of sleep onset) signifying sleep deprivation were seen.

Fig 1
Case 1 – Bird-like face syndrome.



In view of the severity of her sleep apnoea and the presence of cardiopulmonary complications, a permanent tracheostomy was performed after repeated discussions with the patient and her relatives.

Post-operative assessment showed that her apnoea index was only 2 and the lowest oxygen desaturation was 90%. Her cardiopulmonary functions were all markedly improved and her systemic hypertension could be well controlled with only Navidrex K. Her haemoglobin level normalized to 13.2 g/dl. Her snoring and excessive daytime sleepiness had completely disappeared. She is now a much happier person while her relatives are spared her deafening snoring.

Case 2

Mr B is a 43-year old single priest who presented with 20 years' history of moderately loud snoring and excessive daytime sleepiness. He frequently embarassed himself by falling asleep during sermons. When counselling his church members. he had to pace around in the room to keep himself awake. His past health was good. On examination. he was 68.3 kg, being 16.5 kg above his ideal body weight. He had a bulky tongue and moderate narrowing of the nasopharynx and oropharynx.

Overnight polysomnography showed an apnoea index of 12. The longest duration of apnoea was 85 seconds and the lowest SaO_2 recorded was 60%. Sleep architecture was disrupted with the absence of SWS.

After a weight loss of 16 kg, reassessment showed an improved picture with the lowest Sao_2 of 85%. He was put on protriptyline 10 mg nocte as he could not tolerate the anticholinergic side effects of a higher dose. Three months later, he had no more oxygen desaturation during sleep.

Case 3

Mr C is a 42 -year old married engineer with loud snoring and excessive daytime sleepiness for over 10 years. His snoring was a constant distress to his wife. He had frequent episodes of falling asleep inappropriately during meetings and driving. His past health was good except for obesity.

On examination, he was obese, being 100.6 kg (ideal bodyweight 70.4 kg). Blood pressure was normal. He had a narrow pharynx with redundant oropharyngeal tissue.

Overnight polysomnography confirmed obstructive sleep apnoea syndrome with 607 episodes of apnoea during sleep and an apnoea index of 65.9. The lowest SaO_2 recorded was 36% whereas the SaO_2 longest episode of apnoea was 94 seconds. The percentage of sleep stages are : Stage 1 (14.4%), Stage 2 (61.6%), Stage 3 (2.4%), Stage 4 (0%) and REM sleep (21.6%).

The patient failed to lose any weight despite exercise and a weight-reducing diet. Uvulopalatopharyngoplasty (UPPP) was carried out but post-operative polysomnography showed no improvement. Nasal CPAP was very effective. With the CPAP machine set at 10 cm H_2O pressure, he had no oxygen desaturation.

Case 4

Miss D is a 12-year old student. She was noticed by her parent to have excessive daytime sleepiness and loud snoring for one year. She frequently fell asleep during class or while doing her homework, and her school performance deteriorated. Her teachers interpreted these symptoms as laziness and she was admonished accordingly. Her past health was good except for frequent attacks of sore throat.

She was medium-sized and her blood pressure was normal. Examination showed huge bilateral tonsils. Overnight polysomnography showed that she had a mild obstructive sleep apnoea syndrome, with an apnoea index of 6, and the lowest oxygen saturation of 89%. Sleep architecture was preserved with 28% of slow-wave sleep.

Tonsillectomy was carried out. Her snoring and daytime sleepiness were both much improved. On reassessment 3 months after the operation, no apnoea or oxygen desaturation was detected.

Case 5

Mr E is a 52-year old businessman with loud snoring, mild excessive daytime sleepiness, headache and hypertension for 3 years. He had a strong family history of hypertension.

Examination showed that he was 7 kg above his ideal body weight, with redundant soft palate and pharyngeal tissue. Overnight polysomnography revealed predominantly central sleep apnoea, with an apnoea index of 33.9 and the lowest oxygen desaturation of 77%. Slow-wave sleep was completely absent. Treatment with nasal CPAP led to disappearance of apnoea.

DISCUSSION

These 5 cases illustrate the usual procedure we adopt in our sleep assessment unit. After clinical assessment at the sleep clinic, patients with suspected sleep apnoea syndrome are hospitalized for polysomnography to determine the type and severity of apnoea. They are then assessed as inpatients by the Ear Nose Throat surgeon for any local airway obstruction and the chest physician for any cardiovascular complications.

Correctible lessions leading to upper airway obstruction are dealt with as the first step. This may be very gratifying as in Case 4. In mild cases of obstructive sleep apnoea such as Case 2, weight reduction is the first step and pharmacological agents are added if necessary. For other cases of obstructive sleep apnoea, the choice of UPPP versus CPAP is currently still unclear and awaits further research. Some of the patients would opt for UPPP as the first choice as they cannot tolerate the discomfort of CPAP or the prospect of life-long use of the machine. If there is no significant improvement after UPPP, the use of CPAP as in Case 3 would be recommended. Tracheostomy is reserved for cases with severe sleep apnoea syndrome and cardiopulmonary complications as in Case 1.

In children, obstructive sleep apnoea syndrome is most likely to be due to local obstructive lesions, like enlarged tonsils, which are readily amenable to surgical treatment. Sleep apnoea syndrome is easily missed in childhood as daytime sleepiness may be regarded as normal or laziness in a young child. The resulting deterioration in concentration and school performance may be detrimental. In fact, based on experience in the West, obstructive sleep apnoea in children is by no means an infrequent occurrence (5). It should be considered as a differential diagnosis in a child presenting with excessive daytime sleepiness or deterioration in school performance.

Protriptyline can be tried in cases with mild to moderate obstructive sleep apnoea syndrome, but the efficacy is probably low and its use is frequently limited by its side effects, which include dry mouth, blurring of vision, constipation and postural hypotension. In Case 3, the clinical improvement in the sleep apnoea is probably due to both the weight reduction and the use of protriptyline, as weight reduction may lead to reorganization of the soft tissue in the upper airway.

UPPP is found to be effective in about 50% of patients[6]. A feature which predicts a good outcome is the oropharynx as the major site of airway compromise[7]. Patients whose body weight was less than 125% of ideal body weight usually do not respond to UPPP[7]. However, long-term follow-up studies are lacking.

The last case of central sleep apnoea is much rarer than the obstructive type. It is differentiated from obstructive sleep apnoea on polysomnography by the absence of respiratory effort of the chest and abdomen as well as oronasal airflow[1]. Compared with patients with obstructive sleep apnoea, these patients are usually less obese, their snoring is less loud and they may present with insomnia rather than excessive daytime sleepiness[1]. Treatment includes drugs like acetazolamide and clomipramine, diaphragmatic pacing[8] and CPAP[9] which is now the favoured treatment, as in Case 5.

Nowadays, CPAP has emerged with great promise in the treatment of both obstructive and central sleep apnoea syndrome. The major problem with CPAP is the discomfort which may lead to poor compliance with treatment. In patients who can tolerate it, this form of treatment is probably the best one for moderate to severe sleep apnoea. A recent study[10] on long term follow up of 385 male patients with sleep apnoea shows that the use of CPAP is associated with a lower mortality rate compared with patients who received UPPP and untreated patients.

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