

## INSOMNIA: CASE STUDIES IN FAMILY PRACTICE

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### INTRODUCTION

Sleep disorders can be broadly classified into: (a) insomnia, (b) parasomnia, (c) sleep disorders associated with psychiatric, neurologic and other medical disorders, and (d) proposed sleep disorders (e.g. pregnancy and menstrual related sleep disorders).<sup>1</sup> Insomnia is a common encounter in primary care consultations<sup>2</sup> and constitutes the commonest sleep problem<sup>3,4</sup> that presents to the general practitioner.

Based on the National Center for Sleep Disorders Research Classification,<sup>5</sup> insomnia symptoms can be defined as subjective complaints of difficulty falling asleep, difficulty maintaining sleep, early awakening and non refreshing sleep despite an adequate opportunity to sleep. An important consideration is whether the presence of one or more of these symptoms causes significant impairment to the patient's social, occupational or other important areas of functioning.

Insomnia can be due to primary or secondary causes. Primary insomnia refers to insomnia that appears to be unrelated to any identifiable underlying medical or psychiatric disorder.<sup>6,7</sup> Secondary causes of insomnia include conditions where another disorder contributing to or aggravating the insomnia can be diagnosed (Table 1). The diagnosis of sleep disorders is often based on obtaining a detailed sleep history, a neuropsychiatric evaluation, a physical examination looking for medical and other disorders, mental status examination and relevant investigations. A sleep diary that the patient maintains in which sleep-relevant behaviours such as bedtime and waking times, awakenings, total sleep time, napping, medications, alcohol and mood on waking often provides valuable information for the patient and physician. Patients with sleep-disordered breathing, sleep-related motor disorders and those with severe, chronic insomnia for which an obvious cause cannot be found may require referral for sleep laboratory evaluation.

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Table 1. Common causes of insomnia

Primary causes:
○ Adjustment disorder e.g. job loss, brief anxiety states, hospitalization and other stressful life events
○ Psychophysiological insomnia
○ Sleep state misperception
○ Idiopathic insomnia
Secondary causes:
○ Environmental sleep disorder - noise, temperature, humidity
○ Inadequate sleep hygiene
○ Psychiatric disorders- anxiety, depression, panic attacks, mania, schizophrenia, alcoholism
○ Medical illness- respiratory disorders (chronic obstructive airway disease, asthma), rheumatologic disease, neurological disorders (parkinsonism, dementia, fatal familial insomnia)
○ Medications – nicotine, bronchodilators, steroids, beta-blockers, alcohol
○ Sleep wake cycle disorders- jet-lag, shift work, delayed or advanced sleep phase syndrome
○ Sleep-related motor disorders - restless legs and periodic limb movements of sleep
○ Sleep related breathing disorders - sleep apnoea, chronic obstructive pulmonary disease

The following four case vignettes illustrate common and uncommon cases of insomnia that may present to the primary care physician.

### CASE 1

Mr Tan, a 40-year-old man with difficulty falling asleep and maintaining sleep.

Mr. Tan, a 45-year-old man presents with difficulty falling asleep and staying asleep. The problem started after the death of his sister 2 months previously. He is unable to fall sleep until at least an hour after going to bed. He has no previous sleep problems. A general practitioner (GP) he consulted had prescribed low-dose dothiepin (tricyclic antidepressant) as sedation but Mr. Tan was unable to tolerate the drowsiness and dry mouth caused by the medication. He consumes 4 cups of coffee during the day and lately takes alcohol at night to aid sleep. The patient's wife has noted that his legs jerk occasionally during the sleep though Mr. Tan is not aware of these movements.

### What are the likely causes of Mr. Tan's sleep problem?

The most likely causes for Mr Tan's sleep problem are

- Adjustment sleep disorder: This is insomnia related to acute stress, conflict, or recent environmental change. The precipitating event in this case is the death of his

sister. Adjustment sleep disorder is usually a self-limiting disorder, often resolving once the patient comes to terms and copes with the stressor. The course is usually transient lasting from a few days to less than 2 weeks. However, the sleep difficulty may last up to 3 months. Mr. Tan has had no previous sleep problems and the onset of his sleep problem after a major stressful event makes adjustment sleep disorder the likely diagnosis.

- Inadequate sleep hygiene (consumption of coffee and alcohol at bedtime, stress at bedtime) may contribute to his sleep difficulty. Table 2 lists the sleep hygiene measures that may promote sleep.
- Coffee (caffeine) is a CNS stimulant that may delay sleep onset with increases in awakenings and decreases in total sleep time. Alcohol is commonly self-prescribed to initiate sleep but is associated with sleep maintenance difficulties once ethanol is metabolized.
- Periodic limb movements of sleep (PLMS) needs to be excluded in this patient. They are involuntary movements of the legs, occurring every 20-40 seconds, consisting of dorsiflexion of the ankle, flaring of the toes and sometimes with flexion of the knee. The movements resemble a pathologic plantar response. Diagnosis of PLMS can be confirmed by polysomnographic evaluation. The leg movements are often accompanied by repetitive, brief arousals from sleep that the patient is often not aware of. The disruption to sleep may result in non-refreshing sleep and daytime fatigue. In the majority of patients, no underlying cause is found but sometimes it may be associated with anaemia, uraemia, liver disease, peripheral neuropathy, and the restless legs syndrome.

Table 2. General sleep hygiene measures

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| <ul style="list-style-type: none"><li>○ Wake up at the same time everyday</li><li>○ Refrain from consuming caffeine 4-6 hours before bedtime, and minimize total day intake. Caffeine is a stimulant and may disrupt sleep</li><li>○ Nicotine is also a stimulant, avoid cigarette smoking especially near bedtime and upon night awakenings</li><li>○ Avoid taking alcohol in late evening to facilitate sleep onset, alcohol may cause awakening later in the night</li><li>○ Regular exercise in the late afternoon may deepen sleep. Vigorous exercise within 3-4 hours of bedtime may interfere with sleep.</li><li>○ Light snack may induce sleep. Heavy meals too close to bed time may interfere with sleep.</li><li>○ Minimize noise, light and excessive temperature during the sleep time</li><li>○ Do not put the alarm clock within sight if it is the source of distraction.</li></ul> |
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#### **How do you manage Mr. Tan?**

Management of Mr Tan's sleep problem would involve:

- Exploring current psychosocial stresses, grief symptoms, coping skills, and symptoms of depression. Consider grief counselling if appropriate.
- Patient education: explain what adjustment sleep disorder is and advice on good sleep hygiene. (Table 2)

- Since the patient is unable to tolerate a tricyclic antidepressant, consider an intermediate-acting benzodiazepine (e.g. lorazepam) that may be prescribed for a period of about 2 weeks to relief his sleep difficulty while behavioural measures and counselling are considered. A non-benzodiazepine hypnotic e.g. zolpidem is an alternative. The presence of depressive symptoms may warrant the use of a selective serotonin inhibitor (SSRI). However, some SSRIs can aggravate insomnia. Therefore, daytime dosing of SSRIs is advisable.
- His sleep-related limb movements may require investigations by objective sleep laboratory testing (polysomnography) especially if there is later development of non-refreshing sleep or daytime sleepiness.
- Follow up is necessary to see if the insomnia takes a chronic course (chronic psychophysiological insomnia).

#### **CASE 2**

**Puan Suraya, a 40 -year-old lady with difficulty falling asleep.**

Puan Suraya, a 40 year old schoolteacher complains of inability to sleep well for more than 2 years. She regularly goes to bed at 10 pm but is unable to sleep until 1 am. She experiences about 3-5 awakenings every night and with each awakening requires about 30 minutes to fall asleep again. Suraya, also experiences daytime fatigue and is unable to concentrate in her work. She does not take naps during the day. She does not snore and has no usual limb movements during sleep (history from husband). Her general health has been good. She vaguely recalls being involved in a stressful family property dispute just prior to onset of her sleep difficulty.

As bedtime approaches, she becomes very tense and worries about the prospect of another sleepless night. "Sleep has become a real frustration. Every night, when I lie in bed, I have to try very hard to sleep. I keep watching the clock".

She does not take any sleeping pills and has no symptoms of depression. There is no marital conflict. On further questioning, she surprising admits that she sleeps well while on vacations and relatives houses.

#### **What type of insomnia is Puan Suraya suffering from?**

Puan Suraya has psychophysiological insomnia sometimes referred to as 'learnt insomnia' or 'behavioural insomnia'. It usually follows a stressful life event though the patient may not always be able recall the event. The precipitating event resolves but the insomnia that was experienced during the period of psychosocial stress remains and takes a chronic course. In psychophysiological insomnia, the patient has learnt sleep-preventing associations where bedtime and home sleep environment result in agitation, arousal and

increased muscle tone. She has formed an association between the home bedroom environment and not sleeping. Her sleep environment has therefore become a conditioned stimulus for sleep difficulty. As bedtime approaches, she anticipates another sleepless night that results in increasing tension and arousal. The harder she tries to sleep, the less likely she will fall asleep. Patients with psychophysiological insomnia experience paradoxical improvement in sleep when outside their usual sleep environment or not carrying out bedtime routines. Psychophysiological insomnia is diagnosed only if the above learnt behaviours seem to have a dominant role in the insomnia and no other associated medical or psychiatric diseases to explain the insomnia.

#### *How would you manage Puan Suraya's sleep problem?*

Puan Suraya has chronic insomnia, (defined as sleep difficulty experienced on 3 or more days/week for a period >1 month).

- The mainstay of management of chronic insomnia is behavioural therapy. The patient should be instructed to maintain a sleep diary. There are several behavioural strategies and one that may be effective in psychophysiological insomnia includes emphasis on maintaining good sleep hygiene, stress management (muscle relaxation techniques, meditation, guided imagery and biofeedback). Progressive muscle relaxation (Jacobson) at bedtime can be particularly beneficial in reducing cognitive and autonomic arousal at bedtime. Not all these measures need to be initiated at the same time.
- *Stimulus control therapy.* Of the behavioural therapies, Stimulus Control Therapy is particularly useful. (Table 3). The objective of stimulus control therapy is to help the patient learn to re-associate bedtime and the sleep environment with sleeping and correct learned maladaptive behaviour that disrupt sleep. Behavioural techniques take several weeks to learn and provide clinical benefit. Hypnotic use in chronic insomnia plays a limited role and is preferably restricted to short term use during the initial phases of therapy, when the patient is being taught behavioural measures. Intermediate-acting benzodiazepine e.g. lorazepam or other benzodiazepine-like hypnotics e. g. zolpidem, zopiclone may be prescribed for a period of about 2 to 3 weeks to relief the patient's distress. Zolpidem can be taken on a PRN basis on difficult nights. When prescribing hypnotics, particularly the benzodiazepines, the risk of physical dependence should be borne in mind.
- *Cognitive behavioural therapy (CBT).* Is aimed at identifying and changing maladaptive sleep habits, dysfunctional beliefs and unrealistic expectations that the patient has about her sleep and that may perpetuate her insomnia e.g. over-concern about total sleep duration, that 'insomnia is dangerous', 'may lead to

insanity' etc. CBT aims to replace these views with more adaptive substitutes. The reassurance and discussion on these issues, clarifying misperceptions can be therapeutic.

Table 3. Stimulus control therapy

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| <ul style="list-style-type: none"><li>○ Go to bed only when sleepy</li><li>○ Do not use the bed for anything except sleep; i.e. do not read, watch TV, eat, or worry in bed.</li><li>○ If unable to sleep within 20 minutes, get up and go to another room. Stay up as long as you wish and then return to the bedroom to sleep.</li><li>○ If you still cannot fall asleep, repeat rule 3. Do this as often as is necessary throughout the night.</li><li>○ Set the alarm and get up at the same time every morning regardless of how much sleep you got during the night. This will help your body acquire a consistent sleep rhythm.</li><li>○ Do not nap during the day.</li><li>○ Do not take recovery sleep to compensate for a previous bad night</li></ul> |
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#### CASE 3

Mrs Lee, a 62 years old widow who lives alone.

Mrs. Lee presents at the practice requesting for a prescription for diazepam (Valium). She is currently on diazepam 15 mg nocte to help her sleep and allay anxiety. A doctor she consulted after the death of her husband 5 years ago had started her on diazepam 5mg nocte but with time, she required increasing doses of the hypnotic. Her previous attempts to discontinue her medication had failed as it resulted in insomnia, anxiety, tremor, irritability, nightmares and hyperacusis (unpleasant loud distortion of noise) and tinnitus.

She has adjusted to her activities of daily living while on the above medication but does complain of poor memory. A GP she consulted recently after a fall had advised her to discontinue her diazepam in view of her perceived poor memory and tendency to falls.

Physical Exam: Normal. Gait and mobility unimpaired. BP 130/85 mmHg.

Mini Mental Status Exam: Normal

#### *What are the likely consequences of long-term hypnotic (diazepam) therapy in Mrs Lee?*

Diazepam is a long-acting benzodiazepine hypnotic with an elimination half-life of 20-80 hours. The most common side effect of benzodiazepines is CNS depression. Tolerance usually develops to this effect. Other side-effects associated with its use are disorientation, psychomotor impairment, aggression, excitement, confusion, and anterograde amnesia. Benzodiazepines have prominent hypnotic, anxiolytic, muscle relaxant and anticonvulsant properties. High doses of diazepam are associated with an increased risk of falls and fractures in the elderly.

Mrs. Lee is now dependent on the benzodiazepine. Benzodiazepine dependence is defined by the appearance of a predictable withdrawal syndrome, the features of which include insomnia, agitation, muscle tension, irritability, nausea, malaise, sweating, nightmares, depression, hyperreflexia, tinnitus, delusions, and hallucinations. Abrupt withdrawal can result in seizures. The decision to take her off the hypnotic is, therefore, a major one and needs to be discussed with her, weighing the pros and cons. Considering her age and possible age-related cognitive decline, it may be advisable to wean her off the benzodiazepine under careful and regular supervision. Mrs. Lee's consent must be sought.

*Mrs Lee requests if it is possible for her to stop the hypnotic. What advice would you offer her? List down your strategy to withdrawal from the hypnotic.*

Diazepam has to be discontinued very gradually over a period of several weeks on months in order to avoid the appearance of rebound symptoms (original symptoms with increased intensity), and appearance of new symptoms. With a long half-life benzodiazepine like diazepam, the onset of withdrawal symptoms may take 3 to 8 days after discontinuation. Reduction in dosage of diazepam should be made by 25% per week until 50% of the dose is reached. Then, dosage reduction is made by one-eighth every 4 to 7 days. The last period of discontinuation is usually the most difficult and some patients may never to stop the medication.

Adjunctive use of sedating tricyclic antidepressants e.g. dothiepin or antiseizure drugs e.g. valproic acid may be considered during the benzodiazepine tapering period. If insomnia is still a problem, behavioural measures can be considered. Short and intermediate acting hypnotics e.g. lorazepam, alprazolam can be allowed on difficult nights but the risk of dependence on these benzodiazepine remains. Alternatively, Zolpidem which is chemically unrelated to the benzodiazepine can be taken on a PRN basis when sleep difficulty is encountered. It has minimal anxiolytic and no muscle relaxant effects.

#### CASE 4

A 65 year old man with Parkinson's disease and insomnia.

Encik Hamzah, a 68-year old man with Parkinson's disease, complaints of difficulty falling asleep, frequent nocturnal awakenings and non-refreshing sleep. He also experiences daytime fatigue and spontaneous dozing. He goes to bed at 11 pm, takes an hour to fall asleep and is awake by 5 am. He is unable to sleep thereafter.

His is currently on levodopa and bromocriptine. He spends most of the day at home and does admit to feeling depressed. He has marked dystonia affecting his trunk and

upper limbs after a recent increase in medication dosage. His wife has noticed him to be confused on some nights and talk in his sleep. He has not been observed to have sleep-related breathing difficulties.

*What are the likely causes of insomnia in this patient?*

- Several factors can contribute to depression in patients with Parkinson's disease.<sup>8</sup>
- Sleep disturbances tend to increase with age and is particularly common in Parkinson's disease. Difficulty falling asleep and difficulty remaining asleep are the most common complaints. Loss of dopaminergic neurons of the substantia nigra is responsible for most of the daytime features of Parkinson's disease. Other neurochemical changes affecting cholinergic, serotonergic and noradrenergic systems are also involved and have been implicated in the sleep-wake disturbances in Parkinson's disease. The precise role of these neurotransmitters in the disruption of the sleep-wake cycle is as yet unclear.
- Bradykinesia and rigidity – the reduction in number of normal body shifts during sleep, leading to discomfort and nocturnal awakenings, impaired ability to use toilet at night, pain may result from rigidity.
- Tremor in Parkinson's disease is not completely abolished during sleep and medication induced myoclonus can result in increased arousals.
- Medication effects – e.g. levodopa, the biochemical precursor of dopamine and noradrenaline can cause frequent awakenings and reduced REM sleep.
- Depression and anxiety – difficulty falling asleep, early awakening. The on-off phenomena and presence of hallucinations can result in severe sleep disruption.
- Dementia commonly accompanies late-stage Parkinson's disease can be associated with nocturnal confusional episodes and vocalizations and awakenings.

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