Insomnia

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Insomnia : Latin word: in (not) + somnus (sleep).
Synonym : Agrypnia
Definition : Inability to sleep: abnormal wakefulness.
Introduction :

Insomnia is not a diagnosis, but a symptom, or more usually a symptom complex or syndrome. It is defined as a perception or insufficient or poorly quality sleep, despite an adequate opportunity for sleep, leading to a feeling of being unrefreshed on waking, during wakefulness, or in both. There are two important components of insomnia, a) poor sleep at night and b) tiredness during the day which both are varying considerably. Most insomniacs find it difficult to fall a sleep during the day despite feeling tired and therefore do not have true excessive daytime sleepiness.

Insomniacs differ from short sleepers as that the latter, although they may sleep for no longer, wake feeling refreshed, function normally during the day, and do not complain about their sleep at night.

A large number of physiological factors that influence sleep often combine to cause a poor night's sleep. Anxiety and frustration may lead to the degree of wakefulness during the night being overestimated. The mood, degree of boredom and medical disorders both physical and psychological, also influence how severe insomnia is perceived to be. It therefore represents the degree of dissatisfaction with sleep or the mismatch between the expectation and reality (sleep state misperception). Most insomnia's origin is often multifactorial. Understanding insomnia is thus vital for most clinicians to manage this problem successfully to their patients.

Prevalence

Insomnia is the commenest sleep complaints. Almost every adult experiences this condition at some stage in their life. Studies have indicated that about one-third of adults have some degree of insomnia each year, and 10-15% of the population have insomnia at any one time. At the age of 30 about 5% of males and 15% of females have insomnia, but by the age of 70 years 15% of males and 25% of females has this problem[1]. Difficulty in initiating sleep is twice as common in women as in men, but maintaining sleep and early morning awakening are equally common in men and women.

The complaints of insomnia is commoner in those who are anxious or depressed, those with chronic physical illnesses, and those who drink excessive alcohol or take drugs which affect the quality of sleep.

Classification

Insomnia can be classified into 3 groups.

I). Difficulty in initiating sleep.

This is defined as a sleep latency of greater than 30 minutes and is often due to a high level of arousal associated with anxiety and other factors. The main causes of this condition are:

1. Poor sleep hygiene
2. Poor sleep environment
3. Drugs
4. Anxiety
5. Psychophysiological insomnia
6. Restless leg syndrome (RLS)
7. Delayed sleep phase syndrome.

II). Difficulty in maintaining sleep.

In this condition waking may occur irregularly during the night, or at specific times as occurring during rapid eye movement (REM) sleep and the 90-min cycles of REM sleep behaviour disorder episodes. The main causes of this condition are:

1. Pain and discomfort
2. Poor sleep environment
3. Drugs
4. Medical problems, e.g. asthma, nocturia
5. RLS and periodic limb movements in sleep (PLMS)
6. Obstructive sleep apnea (OSA), central sleep apnea (CSA), Cheyne-Stokes respiration
7. Dementia
8. Psychophysiological insomnia.

III). Early morning waking.

This is common in the elderly and the main causes of this condition are:

1. Old age
2. Poor sleep environment
3. Drugs
4. Depression
5. Mania
6. Dementia
7. Pakinsonism
8. Medical disorders and physical disability
9. Menopausal symptom
10. Shift work
11. Circadian rhythm disorders
12. RLS
13. Advanced sleep phase syndrome.

Course of Insomnia

Insomnia can be classified according to time course of the condition into 3 groups.

I). Transient insomnia (acute insomnia or adjustment sleep disorder).

It is usually defined as insomnia that lasts for less than 3 weeks and often has a close temporal association to an event which is clearly recognized by the patients

and is often stressful. Thus diagnosis of transient insomnia can only be definitely made retrospectively after it has been relieved. It is usually common in both men and women who have the previous history of poor sleep or one with a low threshold for emotional arousal. Recurrent episodes of transient insomnia are also common. It is usually triggered by one of the following factors:

1. Change in sleep environment
2. High arousal states
3. Poor sleep hygeine
4. Short term circadian rhythm disorders induced particularly by jet lag and rotating shift work.

II). Cyclical insomnia (recurrent insomnia).

This condition is less common than transient insomnia. It is an unstable balance between the sleep and wake. This instability may be temporary or lifelong. It may recur in physiological changes such as premenstrual phase or psychological change such as manic depression, anorexia nervosa or with recurring behavioural changes such as drug addicts and alcoholism.

III). Chronic insomnia (persistent insomnia).

It is a condition consisting of heterogenous group but divided in to 2 main group:

1. Primary insomnia. This type of insomnia is due to hyperarousal state, possibly due to excessive activity of the ascending reticular activating system, which persists during wakefulness as well as sleep. It is not due to primary sleep disorder, psychiatric condition, or medical or neurological problems or related to drug use or withdrawal.

2. Secondary insomnia. This is the result of a primary sleep or circadian rhythm disorder or a psychiatric, neurological or medical conditions, or related to drug withdrawal. It is often multifactorial, and is very common in the elderly who have more medical problems and in whom sleep is more easily disrupted. Causes of secondary insomnia can be summarized into 6 main groups.

a). Circadian rhythm disorders
- Jet lag
- Shift work
- Delayed sleep phase syndrome
- Advanced sleep phase syndrome
- Irregular sleep wake pattern

b). Poor sleep hygeine
- Poor sleep environment
- Poor sleep-wake patterns
- Drugs

c). Hyperarousal state
- Limit setting disorder
- Sleep state misperception
- Psychophysiological insomnia
- Anxiety
- Chronic fatigue syndrome
- Fibromyalgia
- Anorexia nervosa

d) Psychiatric disorders
- Depression
- Mania
- Schizophrenia

e) Neurological disorders
- Dementia
- Hypothalamic and thalamic lesions
- Idiopathic insomnia
- Parkisonism and other movement disorders
- RLS and PLMS

f) Non-neurological medical condition
- Asthma
- Chronic obstructive pulmonary disease (COPD)
- Angina and ischemic heart disease
- Central sleep apnea
- Cheyne - Stokes respiration.

Effect of Insomnia

Insomnia has several effects to both men and women alike. They are consisting of:

A). Physiological effects of insomnia.
1. The electroencephalogram shows lower delta activity and increasing beta activity
2. Increased heart rate and blood pressure
3. Serum noradrenaline is raised
4. Serum ACTH and cortisol are increased
5. Melatonin secretion is reduced
6. Decreased cerebral blood flow.

B). Psychological disturbances of insomnia
1. Loss of concentration and deterioration of memory
2. Irritability and mood disturbances including anxiety and depression
3. Loss of motivation
4. Fear regarding long-term health effects of insomnia
5. Intrusive ruminating thoughts at bedtime.

C). Physical effects of insomnia
1. A sensation of physical wearing, fatigue or tiredness
2. Muscle aches
3. Hypertension
4. Short stature in children
5. Increased risk of falls, especially in the elderly.

D). Social effects of insomnia
1. Impair the quality of life
2. Less chance of promotion and advancement in work.

E). Mortality. Individuals who sleep for less than 6 hours per night have a shorter life expectancy than those who report sleeping for 7-8 hours per night. This may be because disease causing the sleep disturbance also shorten life expectancy, or because the high arousal state present in insomnia increases mortality, and reduces the rate of recovery from other medical disorders.

Assessment of Insomnia

A) History. A careful history is essential to accurately assess insomnia. The issues that should be considered are:

1. What is the nature of the insomnia?
2. What are the subject's sleep-wake routines and sleep hygeine?
3. Why does the subject wake up?
4. What is the time course of the insomnia?
5. Are there any factors that are perpetuating the insomnia?
6. What is the patient's attitude to the insomnia and what are the expectations of sleep?

B) Physical examination.

Physical examination is usually normal in those with insomnia and contributes little to the assessment of its severity and causes, except in minority with an underlying neurological disorder.

C) Investigations.

TABLE 1. Sleep hygiene.

Good practice	Time	Bad practice
Wake up at same time	Awakening	
Take exercise	Daytime	Take more than 6 caffeinated drinks per day
		Take a nap in the day
Set aside time to deal with tomorrow's stresses	Early evening	
Set aside time to unwind		
Establish regular patterns, e.g. hot bath	Late evening	Take exercise within 3 h of desired sleep time
Relaxation routines		Take caffeine in the evening
Take a light snack and a milky drink		Go to sleep hungry
Go to bed when drowsy		Have a heavy meal within 3 h of desired sleep time
		Drink excess fluid in the evenings
		Drink alcohol late in the evenings
		Continue to work within 1.5 h of desired sleep time
		Watch exciting videos or TV late in the evening
Ensure your bed is comfortable	In bed	Use bedroom for watching TV or as an office
Ensure bedroom is quiet, dark and neither too		Read stimulating books in bed before sleeping
hot nor too cold		
Put the light out soon after going to bed		Try too hard to fall asleep
Ignore intrusive ideas and thoughts		Lie in bed feeling angry if you are unable to sleep

Investigation in a specialist centre is required if insomnia persists despite treatment or if there is doubt about it causes. Investigations may be including:

1. A sleep diary
2. Questionnaires regarding anxiety and depression
3. Polysomnography
4. Imaging of brain.

Principles of Treatment

1. Explain, reassure and advice.
2. Optimize sleep hygiene (Table 1).
3. Treatment the cause of insomnia. The main causes of insomnia to be addressed are :
   a). Medical disorders
   b). Depression
   c). Menopause
   d). Primary sleep disorder
   e). Drug - induced insomnia
   f). Shift work.
4. Hypnotic treatment.

The aim of hypnotic therapy is not only to improve quality and duration of sleep, but also to increase the degree of alertness during the day and to relieve any hyperarousal state. Unfortunately, with many hypnotics the dose needed to improve sleep at night also causes sedation during the day. Short-acting benzodiazepines avoid this complication. They are of particular value in the elderly, in whom the metabolism of benzodiazepines is slowed and sedation during wakefulness may lead to confusion, amnesia and ataxia, leading to falls. Long-acting hypnotics may also impair psychomotor performance during the day in younger subjects and lead to accidents related to driving and handling moving machinery.

Tolerance develops to most hypnotics with prolonged use and because of this it is usually recommended that treatment should not exceed 1 month in duration. This is often sufficient to break the pattern of insomnia, especially when hypnotic treatment is used in conjunction with other measures. This is also sufficiently long to cope with temporary exacerbations of chronic insomnia and with transient and cyclical insomnia. Occasionally, however. longer-term treatment is required, in which case the benefits of treatment have to be weighed against the risks of tolerance. Dependence and withdrawal symptoms. These may be reduced by giving the hypnotic intermittently, for instance for only 3-5 days each week.

Hypnotics should be avoided wherever possible in children, during pregnancy and also while breastfeeding, since many drugs-for instance, benzodiazepines cross the placenta and enter breast milk. Most hypnotics interact with other similar drugs and alcohol to accentuate their hypnotic effect and daytime sedation. There is a risks of respiratory depression and induction of obstructive sleep apneas

The most effective drugs for transient insomnia are quick-acting hypnotics, such as diazepam, zopiclone, eszopiclone and zolpidem. The most suitable drugs for treating chronic insomnia, with and without anxiety are also benzodiazepine group drugs.[2,3]

a). Benzodiazepines and similar drugs. These are the most commonly used hypnotics.

b). Barbiturates. These are now very rarely used.

c). Antihistamines. Sedating antihistamines such chlorpheniramine, promethazine and diphenhydramine lead to daytime sleepiness as well as anticholinergic side effects.

d). Chloral. This is a mild hypnotic which may be useful in children and the elderly.

e). Melatonin is has limited effectiveness in insomnia[4] but should be considered in circadian rhythm disorders.

f). Alcohol. This is frequently used to facilitate sleep, but causes problems including REM sleep rebound late in the night.

g). Herbal remedies. These are commonly used but neither their efficacy nor their long-term safety has been established.

5. Congnitive behavioural therapies.

The aim is to reverse the maladaptive thoughts and behaviour patterns that perpetuate insomnia[5]. Treatment is often combined with sleep hygiene advice[6].

The most important techniques for cognitive behavioural therapies are:

a). Cognitive therapy
b). Mental relaxation
c). Physical relaxation

d). Stimulus control therapy

e). Sleep restriction.

6. Chronotherapy.

Chronotherapy is the manipulation of sleep and waking times by reseting the sleep cycle and then maintaining the change. It is in effect similar to a time zone transition but changes in the sleep cycle are made gradually in order to avoid symptoms similar to jet lag.

The indications for chronotherapy are as follows:

a). To prevent and minimize the effects of jet lag. Chronotherapy induces a progressive adjustment to the new environmental time before and after arrival at the destination.

b). Delayed sleep phase syndrome, putting the bedtime back 3 h each night, and waking up 3 h later, until the desired sleep and waking times are reached is often effective, this requires a motivated patient and determination to maintain the rhythm.

c). Advanced sleep phase syndrome.

7. Light therapy (phototherapy, luminotherapy).

Light therapy is useful in insomnia due to circadian rhythm disorders such as jet lag, shift work and delayed and advanced sleep phase syndromes It has also been used in the evening to delay the sleep phase and improve early morning waking, for instance in depression. Its effectiveness in this situation is uncertain and is probably only transient.

CONCLUSION

Insomnia is the most common sleep disorders affecting one-third of world population. Causes of insomnia are including circadian rhythm disorders, poor sleep hygeine, hyperarousal states, psychiatric disorders, neurological disorders and medical conditions. Assessment of insomnia includes careful history taking, physical examination of the underlying medical and neurological disorders. Polysomnography and neuroimaging may be needed in some patients. Principles of treatment of insomnia are explanation, reassurance and advice about modification of lifestyle on sleep hygeine, treat the cause of insomnia, hypnotic treatment, cognitive behavioural therapies, chronotherapy and light therapy.

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