REVIEW ARTICLE

Insomnia

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Insomnia is defined as repeated difficulty with sleep initiation, duration or quality that occurs despite adequate time and opportunity for sleep. Insomnia complaints are generally comprised of extended period of nighttime wakefulness or insufficient amount of sleep. Occasionally, insomnia is a perception of poor quality sleep even when the sleep period is normal. The daytime impairment due to insomnia is related to fatigue, decreased mood or irritability, generalized malaise and cognitive impairment. It can impair social and vocational functioning as well as quality of life. In the most severe form, insomnia may increase the risk for traffic and worksite accidents as well as psychiatric disorders.

The prevalence of insomnia in the general population is about 30%. However, only 10% of the general population meet the diagnostic criteria. In general, almost 50% of patients under clinical care report symptoms of sleep disruption.

In his cognitive behavioral model of insomnia[1], Dr. Charles Morin proposes an interrelated loop of dysfunctional cognitions and maladaptive habits causing consequences like mood disturbances and physiologic state of arousal. A combination of the temporal pattern and behavioral conditioning can be documented along with typical trait characteristics that predispose to insomnia. The biological studies have concluded presence of increased body metabolic rate[2], change in core body temperature rhythms[3], high plasma cortisol levels and presence of high frequency EEG activity in insomnia patients.

Predisposing factors leading to insomnia are not well understood. Nevertheless, hypothetical factors include increased tendency to hyperarousal, increased cortisol, heart rate response, metabolic rate, catecholamine and high frequency EEG. The insomnia patients tend to have decreased homeostatic sleep drive and are prone to worry. The other confounding factors may be depression, anxiety and night-type versus morning-type disposition. In addition, familial vulnerability may be a significant factor.

Precipitating factors are the focus of the nosology system like stress, pain, illness, depression, anxiety, and shift work, etc. A specific precipitant however is often hard to identify with certainty, and may include family, marital, physical health, work, and school etc.

Perpetuating factors are behavioral, like irregular sleep-wake schedule, spending excessive time in bed, caffeine use, stimulating activities close to bedtime, or in the middle of the night and clock watching during the night. The cognitive factors include worry throughout the day about sleep, fear of not sleeping and irrational beliefs concerning consequences of poor sleep

According to the second edition of the International Classification of Sleep Disorders[5], an official publication of American Academy of Sleep Medicine, insomnia is described in various clinically distinct categories.

Adjustment Insomnia

It is also known as acute insomnia or short-term insomnia. It is related to acute stress. The essential feature of adjustment insomnia is the presence of an identifiable stressor. It is of a relatively short duration, lasting few days to a few weeks. Once the stressor resolves, the insomnia improves. The resulting sleep abnormality may cause prolonged sleep latency, increased number of awakenings, short sleep duration and poor quality of sleep. It may lead to excessive daytime sleepiness. The daytime symptoms of fatigue, impaired concentration and irritability may be expected. The patient may resort to alcohol, illicit drugs or self-treatment with medications. The incidence of adjustment insomnia is 15 to 20 percent. It is more common in women than men.

Psychophysiologic Insomnia

The psychophysiologic insomnia is also known as learned insomnia or chronic insomnia. The essential features of this type of insomnia are heightened arousal and conditioned sleep prevention, association and behaviors with associated decreased daytime functioning during wakefulness. Physiologic arousal may be related to emotional reactions and reflect a cognitive hypervigilance. Patients may complain of inability to shut off their mind in order to prepare for falling asleep. This may be complicated by over concern with the inability to fall asleep. The patients with psychophysiologic insomnia typically complain about ability to sleep better away from their home. Sleep preventive associations are common and may lead to depression and disturbed sleep. The precipitating factors of insomnia may resolve, however, psychophysiologic insomnia that persists for longer periods of time after resolution of acute factors. Decreased attention, vigilance, energy and concentration, fatigue and malaise as well as deteriorated mood and motivation are resultant manifestations of psychophysiologic insomnia. Interestingly, despite the lack of sleep, these patients have a hyper-aroused state and do not feel sleepy during the daytime. The psychophysiologic insomnia is noted in one to two percent of the general population and 12 to 15 percent of sleep center patients. It is more frequent in women compared to men and rarely occurs in young children. Patients are at high risk for recurrence of major depression, excessive use of prescription medications and help-seeking behaviors.

Paradoxical Insomnia

The alternate names for paradoxical insomnia are sleep state misperception or subjective insomnia. This type of insomnia is manifested by complaint of severe insomnia without the objective evidence of any sleep disturbance and without any significant daytime impairment relative to the degree of insomnia reported by the patient. Patients generally complain of little or no sleep as well as continued extensive awareness of their environment. Many of these patients are concerned about the long term effects of lack of sleep. The paradoxical insomnia presents in less than 5 percent of patients. It is most common in young and middle-aged adults.

Idiopathic Insomnia

Idiopathic insomnia is also known as childhood onset insomnia or life-long insomnia. The prevalence of idiopathic insomnia is approximately 0.5 percent of adolescents and 1 percent of very young adults. The essential feature of idiopathic insomnia is a long-standing complaint of insomnia with gradual onset during infancy or early childhood. Like other insomnias, idiopathic insomnia also causes functional impairment. Patients typically complain of life-long sleep difficulty and falling asleep, repeated awakenings and short overall sleep duration. Insomnia is persistent with few extended periods of remission. There are no identifiable factors associated with the onset or persistence of idiopathic insomnia. The functional impairment due to idiopathic insomnia is similar as other types of insomnia. The insomnia has a persistent course and does not resolve.

Insomnia due to mental disorders

It typically begins coincident with the onset of causative mental disorder and waxes and wanes with the activity of the mental disorder. Sleep onset insomnia is typical in patient with anxiety disorder while depression causes sleep maintenance and sleep off-set insomnia. The polysomnographic abnormalities persist after the clinical remission of the mental disorder and are predictive of the relapse of the mental disorder.

Inadequate sleep hygiene

Lack of sleep, sleep onset, maintenance of sleep or sleep offset insomnia is the result of practices that are under the person's behavioral control. These practices tend to produce increased arousal and may be inconsistent with the sleep organization. Approximately 5 to 10 percent of the sleep clinic patients who present with insomnia due have inadequate sleep hygiene as the primary diagnosis.

Insomnia due to drugs and substances

Most of the substances include prescription medications, recreational drugs, caffeine, alcohol, food items or environmental toxins. The insomnia may also occur as a result of discontinuation of the substances or drugs. The most common substances include caffeine, amphetamines and cocaine. Many antidepressants,

antihypertensive, corticosteroids, Parkinson's medications, theophylline and anti-epileptics may cause insomnia. It is found in 0.2 percent of the general population.

Insomnia due to medical conditions

Insomnia is a result of pain, shortness of breath, dyspnea, limited mobility and CNS symptoms. Non-restorative sleep is seen in patients with chronic diffuse pain. Obstructive lung disease typically has sleep onset insomnia with nighttime awakenings and respiratory distress. Sleep related asthma shows nocturnal awakenings with wheezing and coughing. Peri-menopausal sleep disturbances may lead to repeated nocturnal awakenings associated with hot flashes. The prevalence of insomnia due to medical conditions is considered to be 0.5 percent of general and 4 percent of the clinic populations.

The clinical evaluation of Insomnia[4] must assume that people of all ages should be able to have restorative sleep. Co-morbid conditions, in general have a significant role in insomnia and those must be actively screened by suitable tools. Major depression, generalized anxiety disorder, substance use, dementia and many physical conditions may contribute to unrelenting case of insomnia. While the importance of meticulous and detailed history taking can not be further emphasized, an evaluation should include the inventory for depression and a scale for anxiety. A health-related quality of life questionnaire may further enhance the diagnostic yield by bringing out the consequences of the insomnia.

Treatment targets in insomnia must include clear understanding of how insomnia develops. It allows early recognition and intervention before insomnia becomes a chronic and hard to eradicate problem. Sooner the predisposing traits are recognized in a patient, the stressor and other potential precipitating factors can be aggressively addresses before insomnia sets in. The mainstay of insomnia treatment is cognitive behavioral and pharmacological intervention. The cognitive therapy deals with resolving unrealistic sleep expectations, misconceptions, anticipatory anxiety and poor coping skills and instituting behavioral therapies that may include sleep restriction, stimulus control, relaxation, avoiding excessive time in bed, regular sleep schedule and sleep incompatible activities. The practical limitations of some of these proposed therapies should be taken in to consideration and applied on case by case basis. The value of adequate sleep hygiene can not be further underscored and must be part of every treatment plan.

Pharmacologic therapies include FDA-approved drugs like benzodiazepine receptor agonists and melatonin receptor agonist. Benzodiazepines are generally safe, efficacious and well established in the management of insomnia. Proper selection should depend on patient profile and vary between short and long acting compounds to achieve successful results. These drugs should be used for short duration of time as development of tolerance and rebound insomnia upon discontinuation can occur. Melatonin receptor agonists seem to be safe, efficacious and are not restricted to short term use. The abuse potential and toxicity profile is low. However, off-label use (not FDA approved for insomnia) of sedating antidepressants and antipsychotics drugs is common.

This article summarizes the spectrum of insomnia and underscores the need for identification of insomnia in various contexts including medical and psychiatric disorders. Insomnia predisposes individuals to many of these disorders and modifies their course. There are safe and effective behavioral and pharmacologic treatments available for insomnia.

References

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