

Catathrenia

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Definition, Assessment, and Diagnosis

Definition

- Catathrenia is a chronic, usually nightly disorder characterized by expiratory groaning during sleep.¹
- It is usually loud and can be heard outside the bedroom.
- The classic polysomnographic description of catathrenia is a deep inhalation followed by a protracted exhalation during which groaning or moaning sounds are produced.¹

Assessment

- The first step in evaluation is identification of the condition. The affected person is usually unaware of the groaning.
- It is usually someone who shares the bedroom (sibling), bed, or a parent who is checking on the patient; who is disturbed by or worried about the complaint and seeks attention.
- There is a complaint of chronic nightly groaning episodes that usually occur in clusters.
 - The groaning is purely expiratory and is not associated with respiratory distress or troubled emotional facial expression
 - The complaint usually starts in childhood/adolescence and persists for years before it is diagnosed much later in adulthood, usually without any major side-effects.²
 - It is essential that caregivers differentiate this complaint from snoring and other conditions like central sleep apnea, sleep talking, stridor, sleep-related laryngospasm, seizures (especially from insula or frontal/ temporal lobes) or nocturnal asthma.
 - Snoring is an inspiratory sound and if significant is associated with increased work of breathing.
 - Central sleep apnea is characterized by cessation of breathing after expiration and there is absence of vocalization during these events.

- Sleep talking is characterized by words formation and speech as against the monotonous sounds seen in catathrenia.
- Moaning can occur during seizures, but is not the only finding in seizures.
- Stridor is a high pitched sound due to turbulent airflow in the upper airway which can be inspiratory, expiratory or biphasic and usually occurs with all breaths, and not in clusters as seen in catathrenia; it is usually associated with some degree of respiratory distress.
- Sleep related laryngospasm is usually associated with a sense of suffocation, and awakening.
- Nocturnal asthma involves presence of wheezing.¹
- Catathrenia usually does not seem to be associated with any long term effects but some patients have been reported to have excessive daytime sleepiness/ fatigue.⁴
- Catathrenia has been reported in concert with obstructive sleep apnea in some patients.
- Many of the reported patients with catathrenia have presented due to others complaining of this sound.
- Many have been diagnosed incidentally during polysomnograms performed for other sleep complaints.⁵

Diagnosis

- The “gold standard” for diagnosis is the overnight polysomnography (PSG).
- The PSG is a noninvasive test that measures multiple physiologic functions through the night, typically including EEG for sleep staging; pulse oximetry; oronasal airflow, abdominal and chest wall movements, end tidal carbon dioxide levels (ETCO₂); and video recording.⁶
- An extended EEG montage would be very useful when performing a PSG, to differentiate seizures from parasomnias.
- Specific pediatric measuring and scoring criteria should be used.⁶
- It is important to monitor respiratory sound signals during the polysomnography to detect the vocalizations; the respiratory sounds could be better analyzed with the help of a properly functioning video, snore channels, and chin EMG, along with the technologist’s annotations of the events.
- Typical catathrenia described in the ICSD-2 is characterized by “groaning and moaning sounds starting 2-6 hours after sleep onset, last 2-49 seconds, often repeating in clusters for 2 minutes to an hour, and usually recurring in the night, predominantly or exclusively in REM sleep”.¹
- However, since the ICSD-2 was published, more cases of catathrenia have been reported in literature, and the duration of the groaning sounds has been described as lesser than 2 seconds, and it has been shown to occur in NREM as well as REM sleep.^{2,3}
 - The events may be associated with oxygen desaturation in some patients.⁴
 - They may be associated with arousals in some patients.²
- In addition to diagnosing catathrenia and presence of concomitant sleep disruption and/or oxygenation and ventilation defects, the PSG will help in diagnosing other sleep disorders like obstructive sleep apnea and nocturnal seizures. Obstructive sleep apnea, if present concurrently, is usually mild.

Management

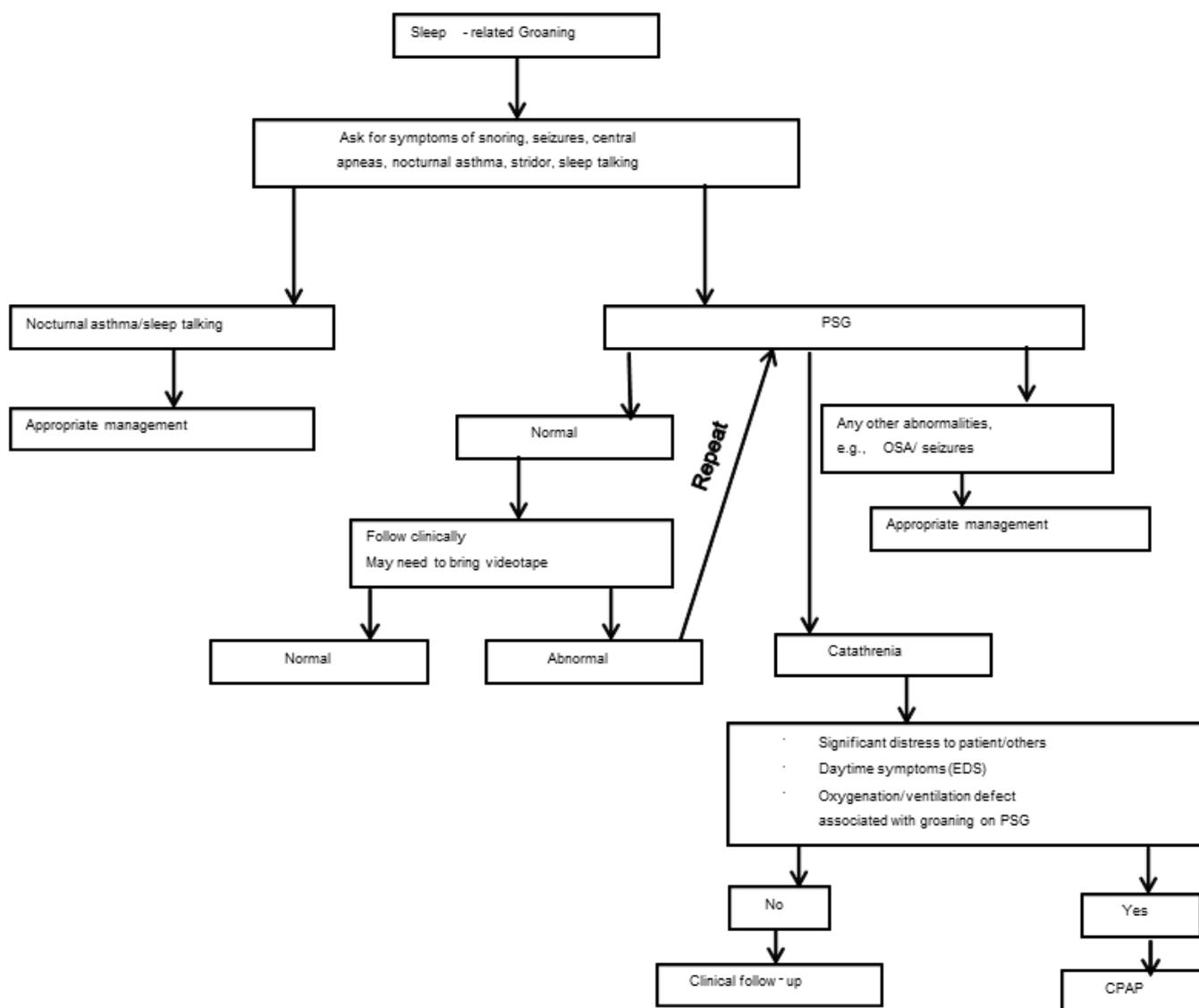
- Any patient that is suspected to have catathrenia should be referred for an overnight polysomnogram.
- If the patient is diagnosed to have catathrenia, then he/she should be referred to a sleep disorders clinic for further management.
- If available, the patient is best evaluated in a multi-disciplinary clinic, where a pediatric

pulmonologist, an ENT, and a gastroenterologist jointly see such patients to rule out upper airway obstructive pathology, nocturnal asthma, and gastroesophageal reflux.

- If the catathrenia is not associated with any significant disturbance to the patient (i.e. daytime symptoms or nighttime abnormalities like significant sleep disruption and/ or oxygenation and ventilation defects) or others (sleep difficulty in bed partner/ or family members), the patient may not require any further treatment and may be followed clinically for development of any of the same.
- If the symptoms are adversely affecting the patient or causing severe distress to others, then management can be discussed with the patient and the affected members.
- The only treatment that has been shown to be effective in a percentage of patients is continuous positive airway pressure; positive pressure, when used to treat concurrent obstructive sleep apnea, helps in reduction of the number of catathrenia events.

Figure 1. Catathrenia Management

To view a larger image on your device, please click or touch the image.



This guideline was developed to improve health care access in Arkansas and to aid health care

providers in making decisions about appropriate patient care. The needs of the individual patient, resources available, and limitations unique to the institution or type of practice may warrant variations.

References

References

1. Vetrugno E, Lugaresi G, Plazzi F, Provini R, et al. Catathrenia (nocturnal groaning): an abnormal respiratory pattern during sleep. *Eur J Neurol* 2007; 14:1236-43.
2. Iriarte J, Fernández S, Fernandez-Arrechea N, Urrestarazu E, et al. Sound analysis of catathrenia: a vocal expiratory sound. *Sleep Breath* 2011;15(2):229-35.
3. Iriarte J, Alegre M, Urrestarazu E, Viteri C, et al. Continuous positive airway pressure as treatment for catathrenia (nocturnal groaning). *Neurology* 2006;66(4):609-10.
4. Abbasi AA, Morgenthaler TI, Slocumb NL, Tippmann-Peikert M, et al. Nocturnal moaning and groaning-catathrenia or nocturnal vocalizations. *Sleep Breath* 2012;16(2):367-73.
5. American Thoracic Society Standards and indications for cardiopulmonary sleep studies in children. *Am J Respir Crit Care Med* 1996;153(2):866-78.