

# SLEEP APNEA

## Comorbid sleep apnea and post-traumatic stress disorder



### BACKGROUND

In obstructive sleep apnea (OSA), patients experience a cessation of breathing during sleep that can cause an interruption and cortical arousal or awakenings, followed by a resumption of normal breathing. This cortical arousal component underlies the well-established association between OSA and comorbid post-traumatic stress disorder (PTSD). The prevalence of OSA in PTSD-afflicted military veterans was cited as 76% in a study involving overnight sleep studies. If the OSA is not recognized or treated, these repetitive arousals can prevent the individual from reaching the restorative rapid-eye-movement (REM) sleep required for stress management. As a result, the veteran is vulnerable to more severe depression, suicidal thoughts, poor quality of life, impaired everyday function, and substance abuse. Articles focused on the link between OSA and PTSD are lacking. In addition, the care of military veterans is being mainstreamed from the Veterans Affairs health care system to the broader community, and these community-based care professionals may be unaware of the special needs of this population. A review of PTSD, an explanation of the association between OSA and PTSD, and detailing of the treatment implications of comorbid PTSD and OSA were presented.

### PTSD

PTSD can occur in civilians who are involved in or witness tragedies, such as the attacks on 9/11 or sexual assault, but it's most likely to be seen in military veterans who have experienced a life-threatening injury or traumatic event or seen others encounter such an event. An estimated 26% to 31% of military veterans will experience PTSD.

The symptoms of PTSD include the experience of recurrent, involuntary, and intrusive memories of the traumatic event during the daytime and nightmares that awaken from sleep. These both trigger painful memories, thoughts, and feelings. Individuals with PTSD tend to avoid reminders of their event, which can progress and eventually impair their ability to take part in social interactions, work, and perform other functions. They can also develop negative thoughts, blame themselves or others, shun interactions with others, and become disinterested in daily activities.

If the individual's PTSD does not permit him or her to reach restorative sleep, behaviors that are aggressive, reckless, or self-destructive along with hypervigilance can develop. Along with the PTSD, the individual may become depressed, abuse substances, and develop suicidality.

The treatment of PTSD begins with cognitive behavioral therapies, which can include prolonged exposure to the traumatic event to achieve desensitization. In addition, the patient will undergo cognitive processing therapy, which blunts the patient to the negative emotional effects of the event by teaching him or her to understand it objectively and reconceptualize it. Eye movement desensitization and reprocessing is also done, which is a method by which patients can reformulate painful memories by moving their eyes from side to side while recalling the event. The eye movement therapy helps to relieve their affective distress.

Pharmacologic methods are also used. The Food and Drug Administration (FDA) has approved sertraline and paroxetine for PTSD symptom reduction. Some patients may also receive prazosin, which helps with the persistent nightmares and sleep disturbances.

### OSA-PTSD LINKS

Although the nature of the interaction between OSA and PTSD remains unknown, it has been hypothesized to be related to the occurrence of obstructive apneas more often during REM sleep, causing the multiple awakenings or microarousals from sleep. The individual with PTSD experiences fragmented and lighter levels of sleep, with the effect of creating an unstable upper airway and sleep-disordered breathing. He or she is hindered by the frequent sleep disruptions from being able to emotionally process traumatic memories, which can lead to disturbing dreams and anxiety.

A study of the links between the 2 disorders found that patients who adhered to their continuous positive airway pressure (CPAP) therapy had a nearly 50% reduction in their nightmare frequency when compared to those who were nonadherent to the treatment. It was hypothesized that patients with OSA who were unable to comply with CPAP therapy may be afflicted with comorbid PTSD. Treatment options for them included jaw and airway surgery, with precautions taken preoperatively to manage any underlying illnesses.

### TREATMENT

Before any surgery, patients with OSA and comorbid PTSD should undergo a psychiatric evaluation to determine their current psychological status and current psychotropic medication regimen. It's important to know if the patient has a history of using alcohol or addictive substances. Taking psychotherapeutic medications and having a history of alcohol abuse prompts the

need for liver function tests, as well as the determination of serum albumin and total protein levels, a complete blood cell count, and a coagulation profile. The anesthesia and nursing teams need to be made aware of the results of these tests to properly prepare for perioperative events.

Care providers should also know that military veterans with comorbid OSA and PTSD are at increased risk of developing emergency delirium (EDL) when they awaken from general anesthesia after any surgery. The signs of EDL include altered mental perception that causes confusion, disorientation, and flashbacks to disturbing events; agitation; and violent physical or verbal behavior. They may also become combative and attempt to remove endotracheal tubes and intravenous lines or to climb out of bed. Physical restraints may be required. Interestingly, PTSD patients with EDL are less likely to require reintubation or to experience death within 30 days of surgery. In addition, their incidence of troponin leak, cardiac arrest, and stroke are similar to those seen in persons without PTSD. PTSD patients given midazolam or dexmedetomidine and propofol as induction agents preoperatively tend to be less likely to develop EDL. Those given etomidate and ketamine (unless it is combined with a benzodiazepine) for induction are more likely to suffer EDL. Among the methods to calm and reorient the patient postoperatively are the use of a quiet environment along with hearing a spouse's voice to make the environment more familiar to the individual.

### Clinical Significance

Patients with comorbid PTSD and OSA who are having jaw and airway surgery to manage the OSA have a higher likelihood of developing EDL immediately post-operatively. The anesthesia and nursing teams should be prepared to handle the symptoms these patients can exhibit. In addition, care delivery for military veterans in a non-military hospital setting can be complicated by PTSD, especially if the PTSD is combined with OSA. Clinicians and anesthesia and nursing teams involved in the care of surgical patients need to understand the challenges associated with OSA-PTSD and be prepared to manage the EDL and other complications that can develop in these patients.

Friedlander AH, Rosenbluth SC, Lee UK, et al: The importance of recognizing an association between obstructive sleep apnea and post-traumatic stress disorder. *J Oral Maxillofac Surg* 76:2251-2253, 2018

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## SLEEP DEPRIVATION

### Effects of lack of sleep on performance



#### BACKGROUND

Sleep is just as important as proper hydration and nutrition when it comes to maintaining physical and mental health. This truth applies not only to patients but also to health care practitioners, most especially surgeons. Poor-quality sleep is associated with taking more sick leave and developing long-term health problems. Quality is determined by the duration of sleep, the number of times awakened during the night, and the ability to return to sleep. Good sleep health is characterized by subjective satisfaction, appropriate timing, adequate duration, high efficiency, and sustained alertness during waking hours. Sleep supports optimum health and performance. Its deprivation is common among health care workers, all of whom will experience it at some time in their careers. Performance factors associated with lack of sleep were enumerated and advice offered regarding the clinician's attitude toward and practice of good sleep habits.

#### PERFORMANCE AND LACK OF SLEEP

##### Patient Care

Varying work shifts can alter the body's clock and leave clinicians unable to perform duties as well as they should. This can create a potentially hazardous environment for patients. Among the areas affected by poor quality or quantity of sleep are cognitive function, safety measures, and mental flexibility.

Getting less than 5 hours of sleep a night reduces the ability to do previously learned tasks and to remember. Decision-making is compromised, as is the ability to concentrate. As a result, it can be difficult for inexperienced clinicians to learn while they are working.

Clinicians who face intense mental challenges require sufficient sleep to avoid taking unwise risks and making inappropriate choices. The aviation industry has accepted the need to adapt