OBSTRUCTIVE SLEEP APNEA AND DEPRESSION

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Disturbed sleep (e.g., insomnia) can be a feature of depression.\(^1\) It is also a feature of obstructive sleep apnea (OSA). There is a high prevalence of depression among people with OSA.\(^2\) For many people, treating OSA improves depressive symptoms, which may suggest a relationship between the two disorders. However, OSA is an underdiagnosed disorder in people with depression.\(^5\) This oversight may negatively impact treatment efforts for depression.

In OSA, the upper airway muscles relax excessively during sleep, which allows tissues such as the tonsils and adenoids to be drawn into the airway and block airflow. The blood oxygen level consequently falls, which ultimately triggers a brief arousal. On arousing, the upper airway muscle tone is restored and the airway opens. During this brief arousal, the person is able to take a few deep quick breaths to restore the oxygen level. Once the oxygen level is restored, the person resumes sleep, which may set the stage for another apnea event. The arousals disrupt sleep, which can result in excessive daytime sleepiness, and negatively affect cognition, mood, alertness, and concentration — factors that are also affected in depression.

Depression is a mood disorder in which a person has feelings of sadness, hopelessness, or pessimism and a loss of interest in activities or hobbies that were once pleasurable. Other features of depression may involve feelings of guilt, worthlessness, or helplessness; a sense of “emptiness”; irritability; restlessness; anxiety; fatigue and decreased energy; sleep changes such as insomnia, early morning wakefulness, or excessive sleeping and eating changes such as overeating or appetite loss. At worse, a depressed person may have thoughts of suicide (i.e., suicidal ideation) or attempt suicide. The symptoms of depression cause significant distress or impairment in social, occupational or other important areas of the person’s functioning. In addition, the symptoms are not attributable to the physiological effects of a substance (e.g., a drug of abuse, an adverse medication effect) or a medical condition (e.g., hypothyroidism).

Clarifying the relationship between OSA and depression has been difficult. Some factors that contribute to this difficulty are the various research methods used to assess comorbid OSA and depression. For example, some studies used questionnaires that have been validated (i.e., the results of the questionnaire are reliable and true for a tested group) for people who have depression but not validated for people who have both depression and OSA; therefore, the findings may not be fully applicable to people with both disorders. Some studies were retrospective studies, which involve evaluating patients’ information after they have been diagnosed with a disease; therefore, these studies did not assess patients for depression before they were diagnosed as having OSA. In some studies, the researchers did not use laboratory-based polysomnography (PSG) to determine whether the patients had OSA (e.g., the OSA diagnosis was based on the respiratory disturbance index, a physician’s diagnosis, or the apnea-hypopnea index).\(^3\)

To counter these difficulties, some scientists have reviewed studies in the medical literature to try to clarify the impact of OSA treatment on relieving depressive symptoms. For example, Marcus Povitz\(^4\) and colleagues in their review of 19 studies found that treating OSA by continuous positive airway pressure (CPAP) or a mandibular advancement device (MAD) improved depressive symptoms in people with OSA, and that the greatest benefit of CPAP treatment on depressive symptoms may be for patients with a worse depression score (i.e., above the cutoff point for depression) at baseline. By contrast, Shakir Ejaz\(^5\) and colleagues in their review cite several studies that indicated an improvement in depressive symptoms with OSA treatment and several studies that did not. In the latter studies, factors such as a short study period (1–3 weeks) and noncompliance with CPAP treatment could have contributed to the finding of a lack of improvement.

To address one drawback of retrospective studies, Cass Edwards\(^6\) and colleagues assessed patients with suspected OSA for depression before they underwent CPAP treatment. They hypothesized that OSA would be associated with depressive symptoms and that the severity of these symptoms would decrease with OSA treatment.

In their study, patients suspected of having sleep apnea filled out a patient health questionnaire (PHQ-9) before they underwent a PSG study. The PHQ-9 asks nine questions about feelings of sadness; tiredness, sleepiness; sleeping too much; having little interest in doing things; having thoughts of personal failures; having trouble in concentration; perceived decreased self-confidence; slow or fast speech and suicidal ideation. They were then treated for apnea by CPAP therapy in which pressurized air is blown through a person’s nose (or nose and mouth) to maintain the...
patency (i.e., openness) of the upper airway. After three months of CPAP therapy, the patients filled out a second PHQ-9 form, and the scores were compared with the baseline score. Edwards found that approximately 95 percent of the CPAP-compliant patients had a significant reduction in depression symptoms, and that the scores on the PHQ-9 form fell by 67 percent from 11.3 (indicating moderate depression) to 3.7 (indicating none to minimal depression). Based on these findings, Edwards concluded that depressive symptoms are common in people with OSA and improve markedly with CPAP therapy and that there is a relationship between OSA and depression.

Studies on the prevalence of OSA and the impact of OSA treatment on suicidal ideation are scarce. However, some studies suggest a high prevalence of OSA in people with suicidal ideation and that CPAP treatment may be beneficial.

Su Jung Choi and colleagues focused on the prevalence of OSA among people with suicidal ideation. The patients in their study had been diagnosed as having OSA but had not yet been treated for it. The patients filled out several questionnaires (e.g., Beck Depression Inventory) to assess them for suicidal ideation, depressive symptoms and related factors (e.g., social support). Choi found that a considerable number (20.5 percent) of patients with OSA also had suicidal ideation.

Choi did not examine the effect of OSA treatment on relieving suicidal ideation. However, a recent case report by Lois Krahn and colleagues illustrates that CPAP treatment may resolve suicidal ideation. In their case report, they described an elderly man (74 years old) who had suicidal ideation to the point that he had considered three plans for ending his life and had been revising his will. He had disruptive snoring and had previously undergone overnight oximetry, which showed a blood oxygen saturation nadir (i.e., low point) of 59 percent, which suggested he had OSA. A formal PSG study was pending; therefore, he had not been diagnosed or treated for OSA. He refused hospitalization for his depression but agreed to a trial of autotitrating CPAP therapy. He used the machine consistently and within two weeks, all symptoms of depression had resolved. People with depression often complain of disturbed sleep (e.g., insomnia), and a physician may focus on relieving symptoms of depression and insomnia or other sleep complaints through drug therapy (e.g., antidepressants) or other approaches. It is unclear to what extent OSA contributes to depression by disrupting sleep. If OSA-disrupted sleep has a causal role in depression or contributes to depression, then untreated OSA in a person with depression could allow the person to struggle unnecessarily with depressive symptoms. Persistent depression in a person with undiagnosed OSA may then be interpreted as a treatment failure (e.g., antidepressant drugs ineffectively resolve depressive symptoms) or may result in the person undergoing unnecessary treatment (e.g., several trials of antidepressant drugs). Because there appears to be a high correlation between OSA and depression and an improvement in depressive symptoms with OSA treatment (e.g., CPAP, MAD), physicians treating people with depression may need to consider assessing and treating these patients for OSA. Treating OSA in a person with depression could then improve the treatment outcome of depression.

REFERENCES


