

has been validated as a screening tool for OSA in sleep and surgical clinics. The probability of moderate and severe OSA steadily increases with higher STOP-Bang scores.

If the ventilatory apparatus (lung, airways, chest wall) is not responsible for chronic hypercapnia, then the focus should shift to respiratory drive and neuromuscular disorders. There is an attenuated increase in minute ventilation in response to elevated CO_2 and/or low O_2 in respiratory drive disorders. These diseases are difficult to diagnose and should be suspected when patients with hypercapnia are found to have normal respiratory muscle strength, normal pulmonary function, and normal alveolar-arterial PO_2 difference. Hypoventilation is more marked during sleep in patients with respiratory drive defects, and polysomnography often reveals central apneas, hypopneas, or hypoventilation. Brain imaging (CT scan or MRI) can sometimes identify structural abnormalities in the pons or medulla that result in hypoventilation. Chronic narcotic use or significant hypothyroidism can depress the central respiratory drive and lead to chronic hypercapnia as well.

Respiratory muscle weakness has to be profound before lung volumes are compromised and hypercapnia develops. Typically, physical examination reveals decreased strength in major muscle groups prior to the development of hypercapnia. Measurement of maximum inspiratory and expiratory pressures or forced vital capacity (FVC) can be used to monitor for respiratory muscle involvement in diseases with progressive muscle weakness. These patients also have increased risk for sleep-disordered breathing, including hypopneas, central and obstructive apneas, and hypoxemia. Nighttime oximetry and capnometry during polysomnography are helpful in better characterizing sleep disturbances in this patient population.

TREATMENT

Hypoventilation

Nocturnal noninvasive positive-pressure ventilation (NIPPV) has been used successfully in the treatment of hypoventilation and apneas, both central and obstructive, in patients with