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Is the Berlin Questionnaire an Effective Screening Tool for Obstructive Sleep Apnea in the Preoperative Total Joint Replacement Population?

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Background: Obstructive sleep apnea (OSA) has become a recognizable disorder among medical specialists but remains a relatively unexplored topic for surgeons, anesthesiologists, and their patients in the perioperative period. Recent studies have begun to describe the negative impact of untreated OSA in the perioperative patient population, specifically in orthopedics. Guidelines from the American Society of Anesthesiologists in 2006 address the screening and care of patients with OSA, although they admit that supportive studies do not exist for many of their recommendations.

Methods: In this study, 80 consecutive total joint replacement patients presenting to the preoperative clinic at our institution were screened using the Berlin Questionnaire, a validated tool used to screen medical outpatients for OSA. Patients who tested as high risk using the scoring system were offered a sleep study to be completed preoperatively.

Results: Of the 80 questionnaires performed, 21 (26%) were screened as high risk. Of these 21 positive patients, 12 agreed to a sleep study. All 12 sleep studies showed OSA, and of these, 7 (58%) were found to be severe. The average body mass index (BMI) for all patients was 30.9 kg/m². As the BMI increased from > 30 to > 35 to > 40, the percentage of positive Berlins increased from 42% to 59% to 75%, with only 1 person requiring the BMI to qualify as a positive Berlin. Only 5 of 42 patients (12%) with a BMI below 30 had a positive Berlin and none of these patients agreed to a sleep study. The Berlin Questionnaire has been found to have a positive predictive value of 89% in prior studies. With a positive Berlin Questionnaire incidence of 26% in our study, it could be estimated that the incidence of sleep apnea in this population of orthopedic patients undergoing a total joint replacement is 23%, which is consistent with estimates for the general population.

Conclusion: This study demonstrates a relatively simple and effective tool for screening patients for sleep apnea in the preoperative setting and highlights the extent of undiagnosed OSA. Clinicians can use the questionnaire results to prompt precautionary measures in the care of these patients or to prompt the expedition of a sleep study. Future studies could investigate the safety of a focused screening effort on those patients with a BMI over 30, as the incidence of clinically important OSA is likely much higher in this population.

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