

The Association of Obstructive Sleep Apnea and Clostridium Difficile: A Nationwide Inpatient Sample Analysis

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❖ Introduction:

- Obstructive sleep apnea (OSA) is a sleep disorder involving repeated apneic episodes during sleep due to an obstruction of the airflow.
- OSA predisposes individuals to community-acquired pneumonia due to upper airway microaspiration.
- Furthermore, hypoxia due to intermittent pharyngeal collapses is shown to cause a pro-inflammatory state and reduced NK cell cytotoxicity and maturation, which can increase the risks of infections due to suppression of immune response.
- Increased incidence of infections in the OSA subgroup leads to increased use of antibiotics. Antibiotic exposure is the primary risk factor for developing Clostridium difficile (C. diff) infection. In synchrony with this notion, the primary purpose of this study was to determine the association between OSA and C. diff infection.

❖ Methods:

- A retrospective analysis was conducted using the Healthcare Cost and Utilization Project-Nationwide Inpatient Sample (HCUP-NIS).
- Patients without C. diff were analyzed (control) and were randomly selected and matched to each patient who did have C. diff.
- Weighted logistic regression models were used to calculate the association between OSA and C. diff for different comorbidities.

❖ Results:

- A total of 7,135,090 patients were included in our analysis. The prevalence of C. diff was significantly higher in patients with OSA (1.19% vs. 1.00%, $p < 0.0001$).
- In addition, multiple comorbidities were significantly elevated in the OSA group compared to those without OSA, including alcohol and obesity ($p < 0.0001$)

❖ Discussion:

- This study uses ICD-10-CM codes with a specific search code for OSA.
- Our large population database shows a significant association between OSA and C. diff.
- One of the hypotheses describing this increased association could be more antibiotic exposure in OSA subgroup leading to C. diff.
- Additional studies are needed to confirm or refute this association.