Long-Term Cardiovascular Risk in Pregnant Patients with Obstructive Sleep Apnea

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Background and Aim

- Obstructive sleep apnea (OSA) is a known cardiovascular risk factor, being associated with a 2.4-fold increased risk of heart failure, 1.6-fold increased risk of stroke, and 1.3-fold increased risk of coronary artery disease.[1,2]
- Prior studies suggest that pregnancy is associated with a higher risk of cardiovascular disease later in life.[3,4]
- This study aims to quantify the burden of long-term cardiovascular events in pregnant patients with pre-existing OSA, as well as identify recurrence of events and any age-specific differences in outcomes.

Methods

- TriNetX database was queried for pregnant patients with and without OSA.
- Patients with cancer, immune deficiencies, complicated pregnancies, and end-stage renal disease were excluded.
- The cohorts were propensity score-matched for multiple variables (Table 1).
- For our age subanalysis, maternal age was categorized as <35 and ≥35 years old, consistent with the clinical definition of advanced maternal age, commonly referred to as geriatric pregnancy.[5]
- Measures of association and a Kaplan-Meier analysis of dementia diagnosis were calculated to assess outcome incidence from 5 to 10 years postpartum.

Results

Figure 1. Kaplan Meier Analysis of OSA+ vs. OSA- Cohorts

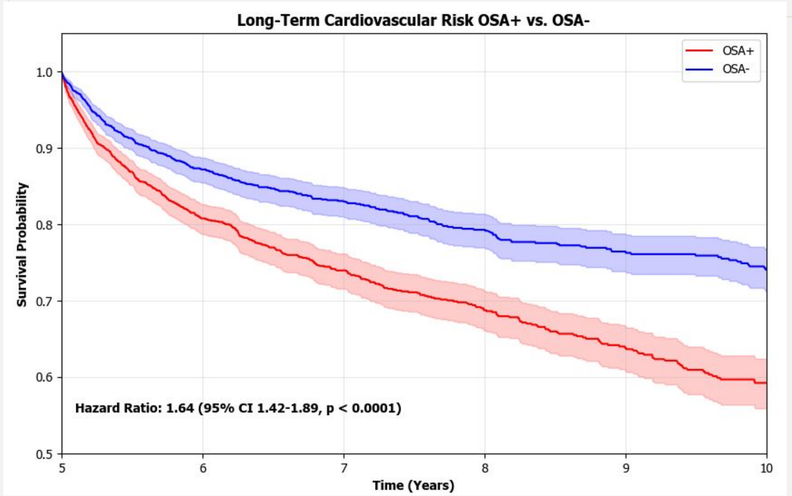

Figure 2. Age-Stratified Kaplan Meier Analysis of OSA+ vs. OSA- Cohorts

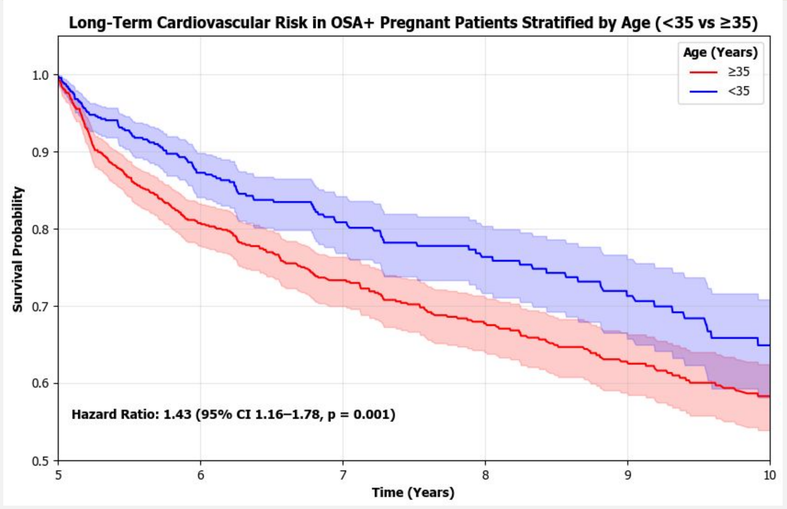

Table 1. Baseline Characteristics After Propensity Score Matching

	Before Propensity Match			After Propensity Match		
Covariant	OSA Count (%)	No OSA Count (%)	SMD	OSA Count (%)	No OSA Count (%)	SMD
Age at Index	3457 (100.00%)	698435 (100.00%)	**0.1854**	3444 (100.00%)	3444 (100.00%)	0.0024
White	1780 (51.49%)	359260 (51.44%)	0.0010	1773 (51.48%)	1774 (51.51%)	0.0006
Black or African American	1097 (31.73%)	119948 (17.17%)	**0.3437**	1091 (31.68%)	1120 (32.52%)	0.0180
Hispanic or Latino	445 (12.87%)	117390 (16.81%)	**0.1109**	444 (12.89%)	419 (12.17%)	0.0219
Asian	85 (2.46%)	40527 (5.80%)	**0.1686**	85 (2.47%)	79 (2.29%)	0.0114
Body mass index [BMI] 40 or greater, adult	948 (27.42%)	14373 (2.06%)	**0.7662**	935 (27.15%)	927 (26.92%)	0.0052
Essential (primary) hypertension	819 (23.69%)	21982 (3.15%)	**0.6321**	807 (23.43%)	812 (23.58%)	0.0034
Mental and behavioral disorders due to psychoactive substance use	748 (21.64%)	56481 (8.09%)	**0.3880**	738 (21.43%)	752 (21.84%)	0.0099
Body mass index [BMI] 30-39, adult	722 (20.89%)	30403 (4.35%)	**0.5140**	714 (20.73%)	741 (21.52%)	0.0192
Nicotine dependence	551 (15.94%)	38495 (5.51%)	**0.3419**	542 (15.74%)	555 (16.11%)	0.0103
Type 2 diabetes mellitus	443 (12.81%)	11272 (1.61%)	**0.4434**	431 (12.52%)	406 (11.79%)	0.0222
Hyperlipidemia, unspecified	390 (11.28%)	6873 (0.98%)	**0.4394**	378 (10.98%)	367 (10.66%)	0.0103
Tobacco use	172 (4.97%)	8150 (1.17%)	**0.2221**	167 (4.85%)	157 (4.56%)	0.0137
Other venous embolism and thrombosis	71 (2.05%)	2400 (0.34%)	**0.1576**	67 (1.95%)	57 (1.65%)	0.0218
Type 1 diabetes mellitus	63 (1.82%)	3031 (0.43%)	**0.1317**	63 (1.83%)	45 (1.31%)	0.0421
Problems related to housing and economic circumstances	60 (1.74%)	2965 (0.43%)	**0.1271**	60 (1.74%)	57 (1.65%)	0.0067
Pulmonary embolism	35 (1.01%)	1098 (0.16%)	**0.1123**	35 (1.02%)	30 (0.87%)	0.0150
Chronic kidney disease (CKD)	35 (1.01%)	1018 (0.15%)	**0.1144**	34 (0.99%)	38 (1.10%)	0.0114
Problems related to education and literacy	34 (0.98%)	1664 (0.24%)	0.0958	32 (0.93%)	40 (1.16%)	0.0228
Problems related to employment and unemployment	27 (0.78%)	1534 (0.22%)	0.0796	26 (0.76%)	29 (0.84%)	0.0098
Phlebitis and thrombophlebitis	16 (0.46%)	1011 (0.14%)	0.0578	16 (0.47%)	16 (0.47%)	0.0000
Alcoholic liver disease	10 (0.29%)	59 (0.01%)	0.0729	10 (0.29%)	10 (0.29%)	0.0000
Portal vein thrombosis	10 (0.29%)	44 (0.01%)	0.0737	10 (0.29%)	10 (0.29%)	0.0000

Discussion

- Pregnant patients with OSA had higher odds of developing adverse cardiovascular outcomes compared to pregnant patients without OSA (RR: 1.50, 95% CI: 1.31-1.70, p < 0.0001).
- Pregnant patients with OSA developed cardiovascular outcomes earlier than those without OSA (HR: 1.64, 95% CI: 1.42-1.89, p < 0.0001) (Figure 1).
- For our age subanalysis, Kaplan–Meier analysis demonstrated lower survival probabilities in the ≥35 age group (58.3% vs. 64.9% at the end of follow-up), with a hazard ratio of 1.43 (95% CI 1.16–1.78, p = 0.001) (Figure 2).

References

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