



ELSEVIER

Contents lists available at ScienceDirect

Sleep Medicine

journal homepage: www.elsevier.com/locate/sleep

Brief Communication

Prevalence of pre-stroke sleep apnea risk and short or long sleep duration in a bi-ethnic stroke population

Lindsey B. De Lott^a, Lynda D. Lisabeth^{a,b}, Brisa N. Sanchez^c, Lewis B. Morgenstern^{a,b}, Melinda A. Smith^a, Nelda M. Garcia^a, Ronald Chervin^d, Devin L. Brown^{a,*}^a Stroke Program, The Cardiovascular Center – Stroke Program, 1500 E. Medical Center Drive – SPC#5855, Ann Arbor, MI 48109-5855, USA^b Department of Epidemiology, 1014 SPH I, University of Michigan School of Public Health, Ann Arbor, MI 48109-2029, USA^c Department of Biostatistics, M4164 SPH II, University of Michigan School of Public Health, Ann Arbor, MI 48109-2029, USA^d Sleep Disorders Center, University of Michigan, 1500 East Medical Center Drive, Med Inn C728, Ann Arbor, MI, USA

ARTICLE INFO

Article history:

Received 11 June 2014

Received in revised form 15 August 2014

Accepted 16 September 2014

Available online 28 September 2014

Keywords:

Ethnicity

Stroke

Sleep apnea

Sleep duration

Sleep-disordered breathing

Insufficient sleep

Mexican American

Cerebrovascular accident

ABSTRACT

Background: The ethnic disparity in ischemic stroke between Mexican Americans (MAs) and non-Hispanic whites (NHWs) may be partly attributable to disparities in sleep and its disorders. We therefore assessed whether pre-stroke sleep apnea symptoms (SA risk) and pre-stroke sleep duration differed between MAs and NHWs.

Methods: MA and NHW ischemic stroke survivors in the Brain Attack Surveillance in Corpus Christi (BASIC) project reported sleep duration and SA symptoms on the validated Berlin questionnaire, both with respect to their pre-stroke baseline. Log binomial and linear regression models were used to test the unadjusted and adjusted (demographics and vascular risk factors) associations of high-risk Berlin scores and sleep duration with ethnicity.

Results: Among 862 subjects, 549 (63.7%) were MA and 514 (59.6%) had a high risk of pre-stroke SA. The MA and NHW subjects showed no ethnic difference, after adjustment for potential confounders, in pre-stroke SA risk (risk ratio (95% confidence interval (CI)): 1.06 (0.93, 1.20)) or in pre-stroke sleep duration (on average MAs slept 2.0 fewer minutes than NHWs, 95% CI: –18.8, 14.9 min).

Conclusions: Pre-stroke SA symptoms are highly prevalent, but ethnic differences in SA risk and sleep duration appear unlikely to explain ethnic stroke disparities.

© 2014 Elsevier B.V. All rights reserved.

1. Introduction

Mexican Americans (MAs), the largest subgroup of Hispanics, have a higher risk of first and recurrent stroke than do non-Hispanic whites (NHWs), with nearly double the risk at younger ages [1]. Reasons for this ethnic disparity are uncertain, but could include an increased prevalence of sleep disorders, such as sleep apnea (SA), an independent stroke risk factor [2]. Similarly, self-reports of short (<7 h) or long (>9 h) sleep duration are associated with an increased risk of stroke [3]. Studies suggest that Hispanics may have a higher prevalence of SA and higher odds of longer sleep compared to NHW [4,5].

Information about pre-stroke SA and sleep duration would allow hypotheses to be generated about the contributions of short or long sleep or disordered sleep to elevated stroke risk in MAs compared with NHWs. Our aim was to compare pre-stroke SA and sleep du-

ration in MAs and NHWs included in a population-based stroke study. We hypothesized that MAs would have a higher prevalence of pre-stroke SA and shorter or longer sleep duration than NHWs.

2. Methods

Subjects were recruited between 7/8/2010 and 1/20/2014 from the Brain Attack Surveillance in Corpus Christi (BASIC) Project, an ongoing, population-based stroke surveillance study conducted in the bi-ethnic community of Nueces County, TX. Our hospital surveillance captures nearly all cases of ischemic stroke and detailed methods have been published previously [1,6,7]. Briefly, stroke cases from all seven acute care hospitals in Corpus Christi are identified through active surveillance of the emergency department and hospital logs and passive surveillance of ICD-9 codes. Complete case capture is facilitated through the geographic isolation of the community with only sparsely populated surrounding areas. The lack of an academic medical center in the area limits referral bias. Study neurologists validate each case based on review of source documentation. The current analysis is restricted to ischemic stroke patients who agreed to undertake a study interview. The

* Corresponding author. CVC-Stroke Program, 1500 E. Medical Center Drive – SPC#5855, Ann Arbor, MI 48109-5855, USA. Tel.: +1 734 936 9075; fax: +1 734 232 4447.

E-mail address: devinb@umich.edu (D.L. Brown).

Institutional Review Boards of the University of Michigan and the local hospitals approved this project. Informed consent was obtained from each subject or surrogate.

Demographics and medical history were obtained from the medical record and a baseline interview, with the subject or a proxy if the subject was unable to participate. Ethnicity was defined by chart designation, which we have previously shown has a 96.3% agreement with self-report in this community [8]. During the baseline interview, the Berlin questionnaire, a validated SA screening tool, and a sleep duration question (“How many hours of sleep do you usually get a night (or when you usually sleep)?”) were asked in reference to the pre-stroke state [9]. The Berlin questionnaire has an 89% positive predictive value for detecting SA (apnea/hypopnea index (AHI) ≥ 5) and 71% negative predictive value (detecting no SA with AHI < 5) in a primary care setting [9]. The Berlin questionnaire was used to screen for SA in the Sleep in America 2005 poll and other studies [10–13]. The questionnaire consists of three categories that query snoring/apneas (category 1), sleepiness (category 2), and hypertension and body mass index (BMI) > 30 (category 3). Each category is scored as low (0) or high risk (1), and an individual is considered high risk if two or more category scores are high risk. The total reported sleep duration was further categorized as short (≤ 6 h), long (≥ 9 h), or normal (7–8 h), based on typical classifications [14]. With an estimated 50% prevalence for overall high-risk pre-stroke SA, we had 82% power to detect a risk ratio of 1.2 for pre-stroke SA in MAs compared with NHWs given our sample size.

Descriptive statistics summarized baseline characteristics, Berlin scores, and sleep duration. Unadjusted ethnic comparisons for categorical and continuous variables, including sleep duration (hours), were made by chi-square and Kruskal–Wallis tests. Log binomial regression with robust standard errors was used to test the unadjusted and adjusted associations between high-risk Berlin score

overall and Berlin category scores and ethnicity. Two separate models (model 1 and model 2) were used to adjust for prespecified potential confounders including age (continuous), sex, current smoking status, current alcohol intake (categorical: < 1 , 1–14, and > 14 drinks per week), diabetes, high cholesterol, atrial fibrillation, hypertension, and BMI (quintiles). Model 1 tested the adjusted association between high-risk Berlin score overall or category 3 and ethnicity. Hypertension and BMI were not included in model 1 as these variables are part of the definitions of category 3 and the overall score. Hypertension and BMI were additionally included in model 2, which tested the adjusted association between category 1 or 2 and ethnicity. Linear regression with robust standard errors tested the unadjusted and adjusted (same prespecified confounders) difference in sleep duration (≤ 6 h, 7 or 8 h, and ≥ 9 h) by ethnicity. SAS version 9.3 (SAS Institute, Cary, NC, USA) was used for analyses.

3. Results

During the study period, there were 1419 validated ischemic strokes among MAs and NHWs. There were 134 patients excluded because > 6 months elapsed between the stroke and the interview, the interview was pending or they completed the interview, but not the sleep questions. Of 1285 eligible patients with validated ischemic strokes, 862 (67.1%) completed the interview that included sleep questions; 549 (63.7%) of these subjects were MA. The baseline characteristics are shown in Table 1. Proxies completed the surveys for 272 (31.5%) of subjects, with no ethnic difference ($p = 0.30$). MAs had a greater prevalence of diabetes, hypertension, and a higher BMI, but a lower prevalence of atrial fibrillation, smoking, and lower use of alcohol compared with NHWs. MAs were also less likely to complete high school or post-high school education than NHWs.

Overall, 514 (59.6%) subjects had a high risk of pre-stroke SA, which was more common in MAs (61.9%) than NHWs (55.6%), but

Table 1
Baseline characteristics and pre-stroke sleep duration among stroke subjects in BASIC.

	All <i>n</i> = 862 <i>n</i> (%)	Mexican American <i>n</i> = 549 <i>n</i> (%)	Non-Hispanic whites <i>n</i> = 313 <i>n</i> (%)	<i>p</i> -value
Female	419 (48.6)	272 (49.5)	147 (47.0)	0.47
Age, median (IQR)	69 (59, 80)	67 (58, 79)	71 (61, 82)	0.003
Health insurance				
Nueces County, self-pay, or not insured	125 (14.5)	83 (15.1)	42 (13.4)	< 0.001
Medicare/Medicaid, VA/Tricare/Champs	211 (24.5)	158 (28.8)	53 (16.9)	
Private, or Private plus Medicare	526 (61.0)	308 (56.1)	218 (69.6)	
Education				
<High school	340 (39.5)	299 (54.7)	41 (13.1)	< 0.001
High school	231 (26.9)	134 (24.5)	97 (31.0)	
>High School	289 (33.6)	114 (20.8)	175 (55.9)	
Current alcohol use				
None	212 (24.6)	169 (30.8)	43 (13.7)	< 0.01
<1	380 (44.1)	242 (44.1)	138 (44.1)	
1–14	220 (25.5)	108 (19.7)	112 (35.8)	
>14	50 (5.8)	30 (5.5)	20 (6.4)	
Current smoker	182 (21.1)	98 (17.9)	84 (26.8)	0.002
Proxy response	272 (31.5)	180 (32.8)	92 (29.4)	0.3
BMI: <i>n</i> , median (IQR)	859, 27.44 (24.37, 32.42)	547, 28.53 (24.96, 33.28)	312, 26.32 (23.70, 30.27)	< 0.001
NIH stroke scale score, median (IQR)	4 (2, 9)	4 (2, 9)	4 (2, 10)	0.72
Diabetes	403 (46.8)	313 (57.0)	90 (28.8)	< 0.001
Hypertension	699 (81.1)	467 (85.1)	232 (74.1)	< 0.01
Atrial fibrillation	140 (16.2)	70 (12.8)	70 (22.4)	< 0.01
Congestive heart failure	94 (10.9)	60 (10.9)	34 (10.9)	0.98
Coronary artery disease	270 (31.3)	169 (30.8)	101 (32.3)	0.65
Stroke/TIA history	257 (29.8)	173 (31.5)	84 (26.8)	0.15
Sleep duration				
Total (hours), median (IQR)	8 (6, 8)	8 (6, 8)	8 (6, 8)	0.52
Short, ≤ 6 h	268 (31.4)	177 (32.4)	91 (29.6)	0.67
Normal, 7–8 h	424 (49.7)	269 (49.3)	155 (50.5)	
Long, ≥ 9 h	161 (18.9)	100 (18.3)	61 (19.9)	

Abbreviations: IQR = interquartile range, VA = veterans administration, HMO = health maintenance organization, PPO = preferred provider organization.

Download English Version:

<https://daneshyari.com/en/article/3176025>

Download Persian Version:

<https://daneshyari.com/article/3176025>

[Daneshyari.com](https://daneshyari.com)