

Dietary Salt Intake and Risk of Pediatric MS: A Prospective Case-Control Study

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Background

- Environmental and dietary factors have become increasingly recognized as risk factors for developing multiple sclerosis (MS).
- High salt has been shown to increase disease onset and progression in recent animal studies.
- Pediatric MS offers a unique opportunity to study salt intake as a potential dietary risk factor close to MS onset.

Objective

- To determine whether dietary salt intake is higher in a multi-center cohort of pediatric MS subjects compared to pediatric controls.

Methods

Subjects

- Cases: met McDonald MS criteria with onset before 18 years of age, less than 2 years duration, seen at one of the 13 pediatric MS Centers.
- Controls: <20 years of age, seen at general pediatric clinics at the same participating institutions.

Dietary sodium intake measurement

- The Block Kids Food Screener (NutritionQuest) was administered to estimate dietary sodium intake.
- This self-report questionnaire has been validated against 24-hour dietary recalls and includes 41 questions on food and beverage consumption and frequency during the past week.

Statistical analysis

- Sodium intake was compared between cases and controls and adjusted for age, race, and insurance status as a proxy for socioeconomic status in logistic regression models.

Results

Table 1. Baseline characteristics between cases and controls.

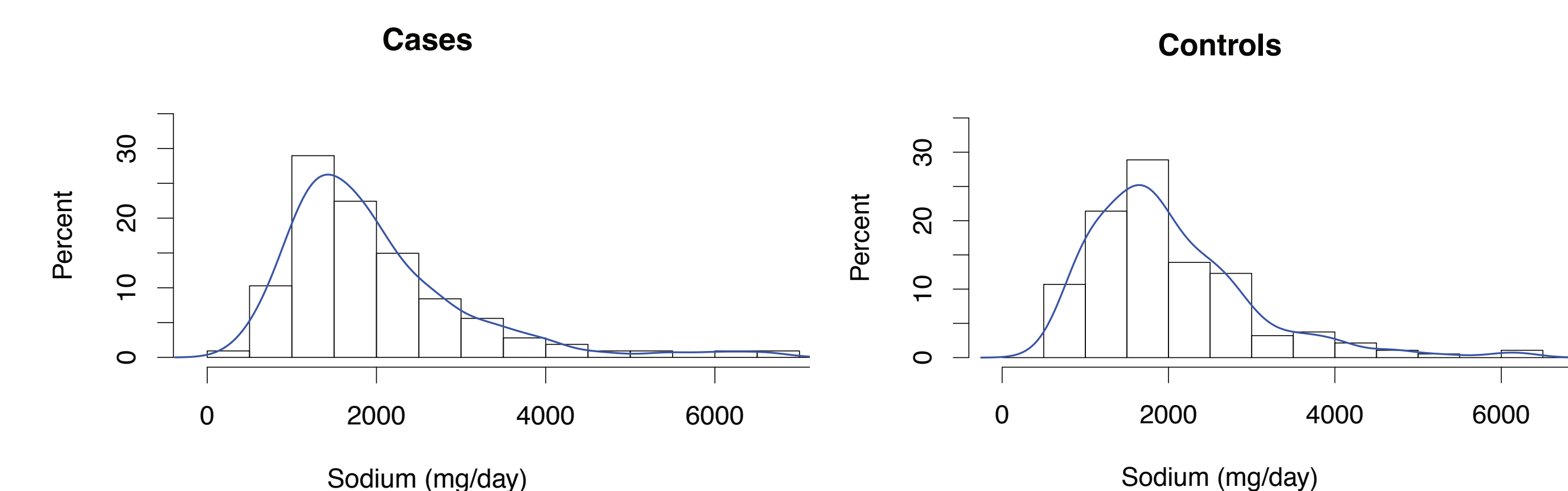
	Cases N=122	Controls N=202	All N=324	P-value
Age (mean +/- SD)	15 (4)	14 (4)	14 (4)	<.01
Energy (kcal/d)	1308 (618)	1356 (658)	1338 (643)	0.51
Total fat (g/d)	53 (29)	55 (29)	54 (29)	0.56
Gender				0.03
Female	72 (59.02%)	94 (46.53%)	166 (51.23%)	
Race				0.51
Am. Indian, Alaskan Native	2 (1.64%)	3 (1.49%)	5 (1.54%)	
Asian	6 (4.92%)	14 (6.93%)	20 (6.17%)	
Black, African American	22 (18.03%)	36 (17.82%)	58 (17.90%)	
Native Hawaiian, Pac. Islander	1 (0.82%)	0 (0.00%)	1 (0.31%)	
White	70 (57.38%)	133 (65.84%)	203 (62.65%)	
Mixed	11 (9.02%)	11 (5.45%)	22 (6.79%)	
Unknown, missing	10 (8.20%)	5 (2.48%)	15 (4.63%)	
Ethnicity				<.01
Hispanic or Latino	40 (32.79%)	39 (19.31%)	79 (24.38%)	
Not Hispanic or Latino	80 (65.57%)	160 (79.21%)	240 (74.07%)	
Unknown, missing	2 (1.64%)	3 (1.49%)	5 (1.54%)	

Table 2. Comparison of unadjusted dietary sodium intake between cases and controls.

Sodium Intake	Gender	Cases N=122	Controls N=202	All N=324	P-value
Sodium (mg/day)	All	1984 (1110)	2094 (1150)	2053 (1134)	0.23
	Male	2354 (1260)	2457 (1333)	2424 (1308)	0.49
	Female	1728 (916)	1677 (695)	1699 (797)	0.89
Excess sodium (%)	All	75/122 (61%)	139/202 (69%)	214/324 (66%)	0.18
	Male	38/50 (76%)	88/108 (81%)	126/158 (80%)	0.43
	Female	37/72 (51%)	51/94 (54%)	88/166 (53%)	0.71

Results cont.

Figure 1. Histograms depicting dietary sodium intake between cases and controls.



- There were significantly more female and Hispanic/Latino cases compared to controls (Table 1).
- Unadjusted dietary sodium intake was not significantly different between cases and controls (Table 2).
- Analyses adjusted for age, race and insurance status revealed a trend toward increased odds of MS (OR=1.018) for each 100 mg/d increase in sodium (95% CI 0.994, 1.042, p=0.139).

Conclusion

- No significant difference in dietary sodium intake was found between cases and controls in the preliminary analysis.
- The suggested trend toward an increased likelihood of MS with higher salt intake in the partially adjusted model highlights the need for further investigation of salt as a potential mediator of MS in a larger subject pool.
- An additional 105 subjects will be included, and adjusted models including body mass index data are pending.

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