



Defining the Border-Zone Between Episodic Migraine and Chronic Migraine: Medical Comorbidities in the US Population

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BACKGROUND

Although Chronic Migraine (CM) is defined as headaches on 15 or more days per month among individuals with ICHD-2 defined migraine, the clinical and biological borders between Episodic Migraine (EM) and CM are uncertain. One important aspect of identifying subgroups and specifying case definitions is comorbidities.

OBJECTIVES

To compare rates of medical comorbidities in three frequency-defined groups with migraine: Low Frequency EM (LFEM; 0-9 days/month), High Frequency EM (HFEM; 10-14 days/month) and CM (≥15 days/month) in a large representative sample of the US population.

METHODS

- The American Migraine Prevalence and Prevention (AMPP) Study is a longitudinal, US-population-based study of individuals with self-identified “severe” headache. In 2004, 120,000 households were screened for headache. Annual surveys were mailed to a random sample of 24,000 respondents with “severe” headache from 2005-2009.
- ICHD-2 defined LFEM, HFEM, and CM were contrasted in odds of self-reporting a variety of medical comorbidities at cross-section in the first year of follow-up (2005).
- Odds ratios (ORs) and 95% Wald Confidence Intervals (CIs), adjusted for age, sex and annual household income, were calculated using the GENMOD procedure in SAS V-9.2.

RESULTS

- Of 18,500 eligible study respondents to the 2005 AMPP survey, 10,609 had LFEM, 640 had HFEM and 655 had CM.
- Contrasting these groups in 2005, rates of pulmonary and respiratory conditions including asthma, bronchitis, chronic bronchitis, emphysema/COPD, allergies/hay fever, and sinusitis increased across headache frequency groups. As seen in Table 1, rates of conditions were higher for CM than LFEM, but CM and HFEM did not differ in rates.
- For example, 24.4% of those with CM had asthma compared to 17.2% of those with LFEM (OR=1.53, 95% CI 1.27,1.84; p≤0.001). However, rates of asthma were not significantly different between CM and HFEM.
- A similar finding was seen for cardiac conditions and risk factors. For example, 4.0% of those with CM had experienced a stroke vs. 2.2% of those with LFEM (OR=1.65, 95% CI 1.09, 2.52, p=0.02), although rates of stroke were not significantly different between CM and HFEM.

CONCLUSIONS

- Individuals with CM have higher rates of many cardiac, respiratory, and other medical comorbidities than persons with EM; however, when EM was divided into two frequency groups, those with CM and HFEM did not differ significantly in rates of most conditions studied.
- The comorbidity profiles of individuals with HFEM have more in common with CM than with LFEM suggesting that HFEM and CM may bear a close biological relationship.

Table 1. Respiratory and Cardiac Comorbidity Profiles of Migraine Frequency Groups and Statistical Comparisons Between Groups

Condition	LFEM N (%)	HFEM N (%)	CM N (%)	HFEM vs LFEM Odds Ratio (95% CI), p value	CM vs LFEM Odds Ratio (95% CI), p value	CM vs HFEM Odds Ratio (95% CI), p value
Respiratory and Pulmonary Conditions						
Allergies/ Hay Fever	5,374 (50.7%)	361 (56.4%)	392 (59.9%)	1.25 (1.06,1.47) p≤0.007	1.47 (1.25,1.73) p≤0.001	1.18 (0.94,1.47) NS
Asthma	1,827 (17.2%)	141 (22.0%)	160 (24.4%)	1.31 (1.08,1.60) p≤0.006	1.53 (1.27,1.84) p≤0.001	1.16 (0.90,1.51) NS
Bronchitis	1,370 (12.9%)	102 (16.0%)	126 (19.2%)	1.36 (0.90,2.06) NS	1.56 (1.06,2.31) p≤0.024	1.15 (0.67,1.98) NS
Chronic Bronchitis	477 (4.5%)	50 (7.8%)	60 (9.2%)	1.73 (1.28,2.36) p≤0.001	1.99 (1.49,2.65) p≤0.001	1.15 (0.77,1.71) NS
Emphysema or COPD	276 (2.6%)	21 (3.3%)	32 (4.9%)	1.26 (0.80,1.99) NS	1.73 (1.18,2.54) p≤0.005	1.38 (0.78,2.44) NS
Sinusitis	3,926 (37.0%)	273 (42.7%)	296 (45.2%)	1.25 (1.06,1.47) p≤0.008	1.39 (1.18,1.63) p≤0.001	1.11 (0.89,1.39) NS
Cardiac Risk Factors and Events						
Circulation Problems	1,212 (11.4%)	100 (15.6%)	113 (17.3%)	1.42 (1.13,1.79) p≤0.002	1.51 (1.21,1.87) p≤0.001	1.06 (0.78,1.43) NS
Heart Disease or Angina	673 (6.3%)	53 (8.3%)	63 (9.6%)	1.35 (1.00,1.82) p≤0.051	1.43 (1.08,1.90) p≤0.012	1.06 (0.72,1.58) NS
High Blood Pressure	2,951 (27.8%)	190 (29.7%)	221 (33.7%)	1.09 (0.91,1.31) NS	1.23 (1.03,1.47) p≤0.021	1.13 (0.88,1.45) NS
High Cholesterol	2,713 (25.6%)	174 (27.2%)	224 (34.2%)	1.10 (0.92,1.33) NS	1.46 (1.23,1.73) p≤0.001	1.32 (1.03,1.69) p≤0.027
Stroke	234 (2.2%)	18 (2.8%)	26 (4.0%)	1.29 (0.79,2.12) NS	1.65 (1.09,2.52) p≤0.019	1.28 (0.69,2.38) NS

NS=Non-Significant; ORs and 95% Wald Confidence Intervals adjusted for age, sex and annual household income