



Chronic Rhinitis is Associated with Headache Frequency and Disability in Migraine: Results from the American Migraine Prevalence and Prevention (AMPP) Study

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BACKGROUND

- Though rhinitis has been associated with an increased prevalence of migraine headache, its association with headache frequency and headache-related disability is unknown.

OBJECTIVES

- To determine if chronic rhinitis and its subtypes are associated with increased headache frequency and headache-related disability among persons with migraine.

METHODS

- The AMPP study is a longitudinal, US population based study of persons with “severe headache”.
- In 2004, screening questionnaires were mailed to 120,000 US households with annual follow-up surveys from 2005-2009.
- The 2008 survey included questions on allergic and non-allergic rhinitis in addition to questions on monthly headache day frequency and headache-related disability (MIDAS).
- Participants meeting ICHD-II criteria for migraine were categorized into rhinitis and non-rhinitis groups based on the presence or absence of ≥ 2 rhinitis symptoms from a list of 5 rhinitis symptoms. This cutpoint was based on previous rhinitis research.
- Rhinitis was subdivided into four subtypes: allergic rhinitis (AR), non-allergic (NAR), mixed (MR; both allergic and non-allergic triggers) and unclassified (UC).
- The primary outcome measures were headache frequency categories (0-4, 5-9, 10-14 and ≥ 15 days/month) and headache-related disability, as measured by MIDAS total sum score corresponding to MIDAS grades (0-5, 6-10, 11-20, and ≥ 20).
- Ordered logistic regression models, adjusted for age, gender, BMI, migraine preventive use and medication overuse, were used for modeling each outcome separately.

RESULTS

- Valid surveys were returned by 10,720 study participants, including 6,008 with migraine. Participants with migraine were included in analyses and were divided into rhinitis and non-rhinitis groups. See Table 1 for sociodemographics.
- Rhinitis occurred in 65% of subjects with rhinitis subtypes distributed as follows: AR (n=737), NAR (n=379), MR (n=1869) and UC (n=924). There were also 1,940 non rhinitis subjects.
- The odds ratio (OR) for increasing migraine frequency for rhinitis overall was 1.30 (95% CI: 1.11, 1.54); among rhinitis subtypes it was significant for MR and UC. This indicates that headaches are more frequent in those with rhinitis overall and in the MR and UC subtypes as compared with non rhinitis controls. (Figure 1)
- In terms of headache-related disability (MIDAS sum score) the OR was 1.32 (95% CI 1.13, 1.54) for rhinitis overall. Of the subtypes, MIDAS grade increased only for the MR subtype. This indicates that headache-related disability is increased in those with rhinitis overall and in those in the MR subtype as compared with non rhinitis controls.

Table 1: Sociodemographic and Clinical Characteristics of Rhinitis and Non Rhinitis Subjects from the 2008 AMPP Survey

Variable	Rhinitis (n=3909)	Non Rhinitis (n=1940)
Gender (% Female)	82%	78%
Mean Age (years)	49.8	49.8
Mean Headache Frequency (days/month)*	3.7	3.2
Mean MIDAS score (days/3 months)**	11.4	9.3
Medication Overuse (%) ζ	31%	26%
Asthma (%)^A	24%	33%

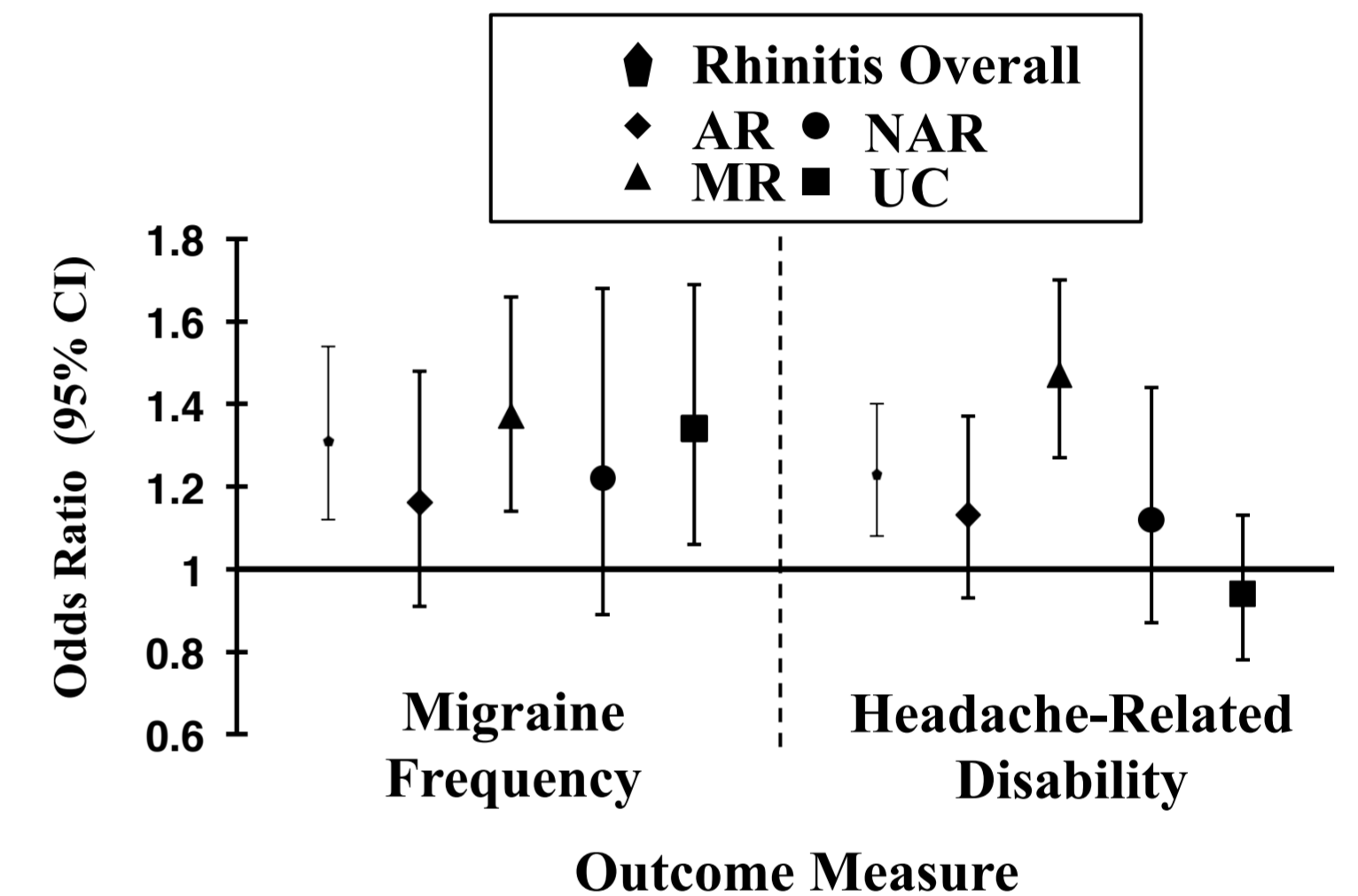
*The mean headache frequency was derived from the total number of days of headache during the preceding 3 months that were reported from the MIDAS questionnaire.

**Represents the total number of days of disability from migraine during the preceding three months as determined from the MIDAS questionnaire.

ζ Represents the percent of patients that met criteria for medication overuse headaches as defined by the International Classification of Headache Disorders

^AA diagnosis if asthma was determined through used of the validated ECRHS questionnaire.

Figure 1: Odds Ratios of Increased Migraine Frequency and Headache-Related Disability by Rhinitis Subtype



CONCLUSIONS

- Rhinitis is common in persons with migraine, occurring in 65% of these individuals while the prevalence of rhinitis in the general population is 24%.
- The frequency and headache-related disability of migraine are increased in persons with rhinitis overall and particularly in those with a mixed rhinitis subtype.
- Our results suggest that individuals with migraine who report rhinitis symptoms may represent a subgroup with a more severe clinical phenotype.
- It is hypothesized that rhinitis could increase migraine frequency and disability by direct activation of trigeminal afferents in the nasal mucosa or by an increased activity of cranial parasympathetic neurons.