Affective Processing in Migraine-Type Headache: Psychophysiological Responses to Emotionally-Charged Stimuli

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Introduction

Migraine-type headache (MTH) is a common neuromuscular disorder often associated with affective distress. Unfortunately, little well-controlled research has been conducted to characterize emotional processing in this group. The aim of the present study was to assess if disruptions in emotional processing exist in MTH. To do so, emotionally-charged picture stimuli (APSs) were utilized to assess the impact of emotion on the acoustic startle reflex (ASR), corrugator EMG skin conductance (SC), and subjective emotion ratings in a group of MTH and sex- and age-matched control participants. A structured diagnostic interview was used to verify IDCS-R1 headache diagnoses. Acoustic startle probes were delivered during 66% of pictures during experimental testing and participants rated their emotional valence, valence, and arousal after presentation of affective picture stimuli. Given research suggesting affective processing can impact pain modulation, altered emotional reactivity may ultimately contribute to MTH pain.

Objective

To determine if deficits in emotional processing exist in MTH by assessing physiological (startle magnitude, corrugator EMG, skin conductance) and subjective (valence, arousal) reactions to emotional stimuli.

Participants

10 Migraine Headache Participants and 10 Control Participants

- MTH Participant Characteristics: 2 Males, 8 Females; White non-Hispanic (100%); single (75%), unemployed (50%), average age = 24.30 yrs (SD=1.43)
- Control Participant Characteristics: 2 Males, 8 Females; White non-Hispanic (83%), single (82%), unemployed (36%), average age = 23.05 yrs (SD=1.43)

Exclusion Criteria

- <18 years of age
- Current acute illness
- Cardiovascular, neurological, circulatory and/or hearing problems
- Other chronic pain condition (e.g., back pain)
- Recent use of analgesic medication
- Narcotic/opioid medication used within 2 weeks of participation
- Current use of antidepressants and/or antipsychotic medication
- Use of tobacco products
- Alcohol (past 6 months)
- Recent psychological treatment
- Previous history of Raynaud’s disease

Data Analysis

- Analyses: 2 (Group: MTH v. Controls) x 5 (Picture Content: attack, loss, neutral, food, erotic) repeated measures ANOVAs
- Planned simple effects tests conducted to examine group differences
- Greenhouse-Geisser corrections used to overcome sphericity
- Mean comparisons made using 1-tailed Fisher’s LSD tests

Procedure

Acoustic Startle Eyeblink Response

- Used to assess emotional processing
- Inter-sensory response to abrupt, unexpected stimulus
- Short burst of non-noxious, 30-40 microsecond acoustic stimulus
- Measured from contraction of orbicularis oculi muscle in humans
- Magnitude of startle eyeblink response covaries with affective valence

Conclusions

- Preliminary results indicate that individuals with MTH may have disruptions in emotional processing, which could play a factor in disruptions in pain processing in individuals with MTH.