Curr Pain Headache Rep (2017) 21:42
DOI 10.1007/s11916-017-0642-8

Alcohol Use as a Comorbidity and Precipitant of Primary Headache: Review and Meta-analysis

Rachel E. Davis-Martin[1] · **Ashley N. Polk**[2] · **Todd A. Smitherman**[2]

Abstract

Purpose of Review In contrast to well-established relationships between headache and affective disorders, the role of alcohol use in primary headache disorders is less clear. This paper provides a narrative overview of research on alcohol use disorders (AUDs) in primary headache and presents a meta-analysis of the role of alcohol as a trigger (precipitant) of headache.

Recent Findings The majority of studies on AUDs in headache have failed to find evidence that migraine or tension-type headache (TTH) is associated with increased risk for AUDs or problematic alcohol use. The meta-analysis indicated that 22% (95% CI: 17–29%) of individuals with primary headache endorsed alcohol as a trigger. No differences were found between individuals with migraine (with or without aura) or TTH. Odds of endorsing red wine as a trigger were over 3 times greater than odds of endorsing beer.

Summary An absence of increased risk for AUDs among those with primary headache may be attributable to alcohol's role in precipitating headache attacks for some susceptible individuals. Roughly one fifth of headache sufferers believe alcohol precipitates at least some of their attacks. Considerable study heterogeneity limits fine-grained comparisons across studies and suggests needs for more standardized methods for studying alcohol-headache relationships and rigorous experimental designs.

Keywords Alcohol · Trigger · Migraine · Red wine · Headache · Comorbidity

This article is part of the Topical Collection on *Psychological and Behavioral Aspects of Headache and Pain*

✉ Rachel E. Davis-Martin
rachel.e.davis2@gmail.com

[1] Department of Emergency Medicine, University of Massachusetts Medical School, Worcester, MA, USA

[2] Department of Psychology, University of Mississippi, Oxford, MS, USA

Published online: 26 August 2017

Introduction

The primary headache disorders of migraine and tension-type headache (TTH) are two of the most prevalent medical conditions globally [1], and migraine remains the sixth leading cause of years lived with disability worldwide [2]. The impact of these conditions is often compounded by co-occurring (comorbid) psychiatric disorders such as major depressive disorder, various anxiety disorders, and bipolar disorder [3–7]. Compared to the abundant literature on the prevalence and impact of mood and anxiety disorders among individuals with migraine or TTH, fewer studies have examined relations between alcohol use disorders (AUDs) and headache. Alcohol use disorders are classified as problematic patterns of alcohol use that result in clinically significant impairment [8]. Alcohol use is of interest also because alcohol may serve as a precipitant (i.e., trigger) of headache attacks for some individuals. The purpose of this paper is to review extant literature on the role of alcohol use in the primary headache disorders of migraine and TTH. The paper first provides a narrative overview of research on AUDs among headache suffers then presents results of a meta-analytic review on the role of alcohol as a potential headache trigger.

Alcohol Use Disorders in Primary Headache

Compared to other substance use disorders, AUDs are relatively common among adults (8.5% annual prevalence), and

selected days over multiple weeks, allowing sufficient time between exposures to minimize carryover effects and interactions with other triggers [23•].

Future research in this area should also assess the importance of consumption frequency and quantity in attempt to determine the threshold necessary for alcohol to precipitate an attack, as well as moderator variables that make some individuals susceptible only when present simultaneously with alcohol consumption (e.g., high stress, poor sleep, menstruation). Incorporating electronic diaries may be useful in assessing frequency and consumption of alcohol in temporal relation to headache onset. Clinically, we concur with Panconesi and colleagues [27] in their assertion that there is little reason to routinely advise headache patients against modest consumption of alcohol. Such advice might be appropriate among patients for whom a relationship between consumption and headache has been definitively established, but there is little evidence that "elimination diets" are effective or practical [79] and growing evidence suggests that therapeutic exposure to headache triggers holds promise as an adaptive alternative coping strategy to complete avoidance [80, 81•].

Compliance with Ethical Standards

Conflict of Interest Ashley N. Polk and Rachel E. Davis-Martin declare that they have no conflict of interest.

Todd A. Smitherman has received personal fees from Alder Biopharmaceuticals outside the submitted work.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

References

Papers of particular interest, published recently, have been highlighted as:
- • Of importance
- •• Of major importance

1. Vos T, Flaxman AD, Naghavi M, Lozano R, Michaud C, Ezzati M, et al. Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet. 2012;280:2163–96.
2. Global Burden of Disease Study 2013 Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet. 2015;386:743–800.
3. Baskin SM, Lipchik GL, Smitherman TA. Mood and anxiety disorders in chronic headache. Headache. 2006;46:76–87.
4. Baskin SM, Smitherman T. Migraine and psychiatric disorders: comorbidity, mechanisms, and clinical applications. Neurol Sci. 2009;30(Suppl 1):61–5.
5. Jette N, Patten S, Williams J, Becker W, Wiebe S. Comorbidity of migraine and psychiatric disorders: a national population-based study. Headache. 2008;48:501–16.
6. Saunders K, Merikangas K, Low NCP, Von Korff M, Kessler RC. Impact of comorbidity on headache-related disability. Neurology. 2008;70:538–47.
7. Peterlin BL, Rosso AL, Sheftell FD, Libon DJ, Mossey JM, Merikangas KR. Post-traumatic stress disorder, drug abuse and migraine: new findings from the National Comorbidity Survey Replication (NCS-R). Cephalalgia. 2011;31:235–44.
8. American Psychiatric Association. Diagnostic and statistical manual of mental disorders, 5th edition (DSM-5). Washington, DC: American Psychiatric Association; 2013.
9. Breslau N, Davis GC, Andreski P. Migraine, psychiatric disorders, and suicide attempts: an epidemiologic study of young adults. Psychiatry Res. 1991;37:11–23.
10. Swartz KL, Pratt LA, Armenian HK, Lee LC, Eaton WW. Mental disorders and the incidence of migraine headaches in a community sample: results from the Baltimore epidemiologic catchment area follow-up study. Arch Gen Psychiatry. 2000;57:945–50.
11. Subramaniam M, Vaingankar JA, Abdin E, Chong SA. Psychiatric morbidity in pain conditions: results from the Singapore Mental Health Study. Pain Res Manag. 2013;18:185–90.
12. American Psychiatric Association. Diagnostic and statistical manual of mental disorders, 4th edition, (DSM-IV). Washington, DC: American Psychiatric Association; 1994.
13. International Headache Society. The international classification of headache disorders, 3rd ed. Beta version. Cephalalgia. 2013;33:645–61.
14. Merikangas KR, Angst J, Isler H. Migraine and psychopathology: results of the Zurich cohort study of young adults. Arch Gen Psychiatry. 1990;47:849–53.
15. Lipton RB, Bigal ME, Diamond M, Freitag F, Reed ML, Stewart WF. Migraine prevalence, disease burden, and the need for preventive therapy. Neurology. 2007;68:343–9.
16. Bohn MJ, Babor TF, Kranzler HR. The Alcohol Use Disorders Identification Test (AUDIT): validation of a screening instrument for use in medical settings. J Stud Alcohol. 1995;56:423–32.
17. Domingues RB, Domingues SA, Lacerda CB, Machado TV, Duarte H, Teixeira AL. Alcohol use problems in migraine and tension-type headache. Arq Neuropsiquiatr. 2014;72:24–7.
18. Ewing JA. Detecting alcoholism: the CAGE questionnaire. JAMA. 1984;252:1905–7.
19. Aamodt AH, Stovner LJ, Hagen K, Bathen G, Zwart J. Headache prevalence related to smoking and alcohol use. The Head-HUNT Study. Eur J Neur. 2006;13:1233–8.
20. Domingues RB, Domingues SA. Headache is associated with lower alcohol consumption among medical students. Arq Neuropsiquiatr. 2011;69:620–3.
21. Kelman L. The triggers or precipitants of the acute migraine attack. Cephalalgia. 2007a;27:394–402.
22.•• Martin VT, Vij B. Diet and headache: part 1. Headache. 2016;56:1543–52. **This is a rather comprehensive paper on diet and headache that reviews not only alcohol but other foods and ingredients within foods.**
23.• Turner DP, Smitherman TA, Martin VT, Penzien DB, Houle TT. Causality and headache triggers. Headache. 2013;53:628–35. **This paper outlines the numerous assumptions that must be met to experimentally confirm that a stimulus is a headache trigger.**
24. Lipton RB, Pavlovic JM, Haut SR, Grosberg BM, Buse DC. Methodological issues in studying trigger factors and premonitory features of migraine. Headache. 2014;54:1661–9.
25. Panconesi A. Alcohol and migraine: trigger factor, consumption, mechanisms. A review. J Headache Pain. 2008;9:19–27.