

Medication Overuse Headache: A Trap for the Headache Patients

RAHMANA, HABIB R, BHOWMIK NB, HAQUE A

Summary

Medication Overuse Headache (MOH) was previously termed analgesic rebound headache, drug-induced headache, and medication-misuse headache. It is not a primary headache but frequently coexists with primary chronic daily headache. All acute symptomatic medications used to treat headaches have the potential for causing MOH. Highest with opioids, butalbital-containing combination analgesics, and aspirin/acetaminophen/caffeine combinations. The development is typically preceded by an episodic headache disorder, usually migraine or tension-type headache, that has been treated with frequent and excessive amounts of acute symptomatic

medications. The diagnosis is based upon clinical impression. A history of analgesic use averaging more than two to three days per week in association with chronic daily headache is suggestive. The diagnosis is made when the pattern of frequent headaches fulfills the diagnostic criteria for MOH. The basic steps in the management: Patient education, withdrawal of the offending medication, bridge (transitional) therapy, establishment of a headache treatment regimen covering acute and preventive care, follow up and relapse prevention.

(Birdem Med J 2013; 3(2): 94-98)

Background

Some migraine patients fall into a trap by overusing the medications they take when they get their headaches, ending in a downward spiral of daily or near-daily headaches for which their medications become less and less effective. This condition is called medication overuse headache. It has also been termed analgesic rebound headache, drug-induced headache, and medication-misuse headache. Although not a primary type of chronic daily headache, MOH deserves proper coverage since it frequently coexists with primary headache.^{1,2} After successful MOH treatment, preventive medication for the underlying primary disorder have a greater chance for success.³

Pathophysiology

Available evidence suggests all drugs used for the acute symptomatic treatment of headache can cause MOH in

primary headache disorders.^{4,5,6} The precise mechanisms that lead to MOH are still uncertain.

Genetic predisposition

Various studies and clinical observations suggest that MOH is restricted to individuals who already have other headache disorders⁴. Furthermore, MOH does not develop de novo in individuals with no previous headache history.⁵

In a study of 103 patients using daily analgesics for arthritic pain but not for headache, only eight patients (7.6 percent) had chronic daily headache, each of whom reported a previous history of episodic migraine.⁶ Patients with migraine and tension-type headache seem to have the highest potential for MOH.⁷ However, MOH has also been described in cluster headache⁸ and in hemicrania continua.⁹

Central sensitization

Investigations demonstrating facilitation of trigeminal pain processing in patients with chronic headache have suggested that central sensitization, the same process that occurs in migraine, could lead to MOH.^{7,10} In humans, chronic exposure to triptans and other analgesics could lead to down regulation of serotonin receptors.^{4,11,12}

Biobehavioral factors

It has been proposed that MOH is a biobehavioral disorder.¹³ Some patients may have addictive disease,

Rahman A, Habib R, Bhowmik NB, Haque A, Department of Neurology, Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders, 122 Kazi Nazrul Islam Avenue, Shahbag, Dhaka.

Address for correspondence: Dr. Rahman A, Department of Neurology, Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders, 122 Kazi Nazrul Islam Avenue, Shahbag, Dhaka. Email: aminurdr@gmail.com

Received: 12 March, 2013

Accepted: 09 July, 2013

characterized by compulsive drug seeking and drug taking behavior despite negative consequences, other patients may use opiates or other drugs with sedative/anxiolytic effects to treat both pain and a coexistent anxiety disorder.¹³ In a prospective population-based longitudinal study of 32,067 adults from Norway, subjects using analgesics daily or weekly at baseline had a significantly increased risk of chronic pain 11 years later compared to those who never used analgesics.¹⁴

Epidemiology

The prevalence of MOH in the general population is approximately 1 percent,¹⁵ and is higher in women than in men.^{10,19} In a population-based study of over 49,000 subjects from Norway, the prevalence of chronic headache with analgesic overuse lasting three months or longer was 0.9 percent overall²⁰ In two smaller population studies from Spain, the prevalence of medication overuse headache was approximately 1.5 percent,^{18,21} with a female to male ratio of 17:1.²¹ Among patients who are seen at specialized headache centers, the prevalence of MOH is much higher, ranging from 4 to 80 percent.^{4,22,23}

Causal medications

All acute symptomatic medications used to treat headaches have the potential for causing MOH.^{4,5,6} Based upon the literature and clinical experience, the risk appears to be highest with opioids, butalbital (Barbiturate with an intermediate duration of action)-containing combination analgesics, and aspirin/acetaminophen/caffeine combinations.^{10,24} The evidence supporting these risks is illustrated by the following reports: A 2008 review of clinic-based and population studies found that, for opiates, the increased risk was more pronounced in men, and the critical dose of exposure was approximately eight days a month.^{25,26} In a 2004 report from a tertiary headache center in New York of 169 patients who were followed in the last five years of the study (i.e., the triptan era), the drugs most often associated with MOH included the following (Figure:1).²⁷

In a 2002 prospective German study of 98 patients with MOH, including 70 patients with migraine as the underlying primary headache type, overuse of triptans led to MOH sooner than overuse of ergots or analgesics, and did so at a lower frequency of use.²⁸ The mean

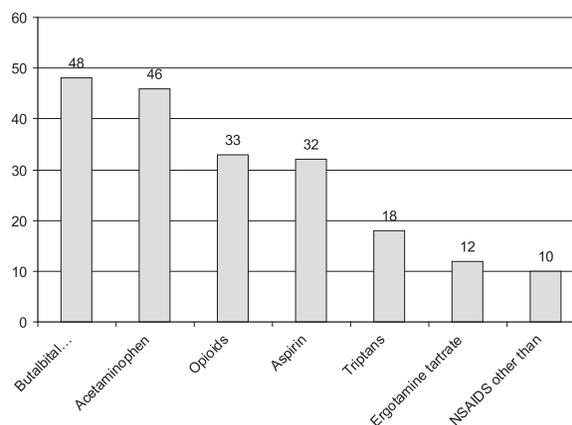


Fig-1: Drugs associated with MOH.

interval until onset of MOH was shortest for triptans (1.7 years), longer for ergots (2.7 years), and longest for analgesics (codeine, barbiturates, caffeine combinations) (4.8 years).²⁸

The frequency of use for drugs implicated in MOH varies from country to country and is influenced by multiple factors.⁴ Butalbital is commonly overused in the United States, while simple analgesics and caffeine-containing drugs are most commonly associated with MOH in other parts of the world (eg, Spain and Brazil).^{18,29} Until the mid 1990s, combination analgesics with codeine or caffeine, or ergots combined with caffeine were the most frequently overused drugs associated with MOH in many European countries.³⁰

With the introduction of triptans, the pattern of MOH may be changing. In a review of patients seen at a single headache center in the US from 1990 to 2005, MOH secondary to ergotamine decreased while MOH secondary to triptans increased.³¹ It is often difficult to identify a single causal substance for MOH, since many patients are overusing more than one drug.^{4,27}

Clinical features

The development of MOH is typically preceded by an episodic headache disorder, typically migraine or tension-type headache, that has been treated with frequent and excessive amounts of acute symptomatic medications.¹⁰ In clinical practice, MOH often manifests as a headache that is present or develops upon awakening.¹⁰

The severity, location and type of head pain can vary significantly among different individuals, but headache

commonly occurs daily or nearly daily.¹⁰ Nausea, asthenia, difficulty concentrating, memory problems and irritability can accompany.¹⁰ To some extent, the clinical features may depend upon the type of headache medication that is overused.³²

Diagnosis

The diagnosis is based upon clinical impression. A history of analgesic use averaging more than two to three days per week in association with chronic daily headache supports the diagnosis. The diagnosis is made when there is a pattern of frequent headaches that fulfill diagnostic criteria for MOH.

Diagnostic criteria

The International Classification of Headache Disorders 2nd edition (ICHD 2) diagnostic criteria for MOH were published in 2004³³ and revised in 2006.³⁴ The revised criteria are as follows (Table-I).

Table-I

The revised diagnostic criteria for MOH³³

- A. Headache present on >15 days a month
- B. Regular overuse for more than three months of one or more acute/symptomatic treatment drugs:
 - 1 Ergotamine, triptans, opioids, or combination analgesic medications on >10 days a month on a regular basis for more than three months
 - 2 Simple analgesics or any combination of ergotamine, triptans, analgesic opioids on >15 days a month on a regular basis for more than three months without overuse of any single class alone
- C Headache has developed or markedly worsened during medication overuse

Note that “overuse” is defined by the frequency of medication treatment, and the criteria for overuse are specific for the type of medication being overused¹⁰.

Differential diagnosis:

Any form of chronic daily headache, whether primary or secondary, needs to be considered in the differential diagnosis. A high frequency of drug intake does not mean that MOH is the only headache disorder that is present.⁴ Typically, the patient has an underlying primary headache disorder.

Treatment

Withdrawal of the overused medication as soon as possible is the treatment of choice.³⁵ Withdrawal of

overused acute medications can be accomplished on an outpatient or inpatient basis.³⁶ MOH treatment involves four steps (Table-II)

Table-II

Treatment steps

1. Completely (100%) wean off overused medications
2. Establish preventive medication and/or behavioral or nondrug preventive strategies
3. Provide acute medications with limits to prevent further overuse
4. Educate patient and family

It is also important to educate patients about the detrimental effects of analgesic overuse. Bridge (transitional) therapy may be useful during drug withdrawal to provide symptomatic relief. For most patients, a preventive (prophylactic) medication aimed at the suspected background primary headache disorder. An evaluation of the patient’s MOH based on the duration and severity of the headache attacks, the number of overused medications consumed and their doses and comorbid medical and psychiatric conditions is necessary to formulate a treatment plan (Table-III).

Table-III

Treatment options

- > Out patients alone
- > Infusion therapy : out-patient & in-patient
- > Integrated program : Day hospital & In-patient program
- > All of the above with or without Onabotulinumtoxin A (Botulinum toxin type A)

In every patient with rebound, physicians should address the wean up front in the first steps taken. Prevention and wean should be added at the same time. There are four levels of wean (Table-IV).

Table-IV

Four levels of wean

1. Conventional out-patient : slow wean simultaneous Onabotulinum toxin A
2. Conventional out-patient with quick wean with bridge medications
3. Medical model : Infusion as the bridge with quick OnabotulinumtoxinA
4. Multidisciplinary program : day hospital and in-patient wean.

Initiation, or slow addition of preventive medications; migraine-specific acute medications provided with strict limits. Initiation, or preventive medications (bridge with no tapering of rebound medications). Initiation or preventive medications either in infusion suite or inpatient. Multidisciplinary team using infusions as the bridge and quick OnabotulinumtoxinA initiation or preventive medications

References

- Bahra A, Walsh M, Menon S, Goadsby PJ. Does chronic daily headache arise de novo in association with regular use of analgesics? *Headache* 2003; 43: 179-90.
- Wilkinson SM, Becker WJ, Heine JA. Opiate use to control bowel motility may induce chronic daily headache in patients with migraine. *Headache* 2001; 41: 303-9.
- Mathew NT, Kurman R, Perez F. Drug induced refractory headache—clinical features and management. *Headache* 1990; 30(10):634.
- Diener HC, Limmroth V. Medication-overuse headache: a worldwide problem. *Lancet Neurol* 2004; 3(8): 475.
- Scottish Intercollegiate Guidelines Network, 2008. 107: Diagnosis and management of headache in adults. A national clinical guideline. www.sign.ac.uk/pdf/sign107.pdf.
- Joint Formulary Committee. British National Formulary. Edition 58. London: BMJ Group and RPS Publishing, September 2009.
- Katsarava Z, Jensen R. Medication-overuse headache: where are we now? *Curr Opin Neurol* 2007; 20(3):326.
- Paemeleire K, Bahra A, Evers S, Matharu MS, Goadsby PJ. Medication-overuse headache in patients with cluster headache. *Neurology* 2006; 67(1): 109.
- Young WB, Silberstein SD. Hemicrania continua and symptomatic medication overuse. *Headache* 1993; 33(9):485.
- Dodick D, Freitag F. Evidence-based understanding of medication-overuse headache: clinical implications. *Headache* 2006; Nov 46; Suppl 4:S202.
- Steiner T, 2010. Guidelines for all healthcare professionals in the diagnosis and management of migraine, tension-type, cluster and medication-overuse headache. 3rd edition. http://216.25.88.43/upload/NS_BASH/BASH_guidelines_2010.pdf.
- Katsarava Z, Fritsche G, Muessig M, Diener HC, Limmroth V. Clinical features of withdrawal headache following overuse of triptans and other headache drugs. *Neurology* 2001 Nov 13; 57(9):1694–98.
- Saper JR, Hamel RL, Lake AE 3rd. Medication overuse headache (MOH) is a biobehavioural disorder. *Cephalalgia* 2005; 25(7):545.
- Zwart JA, Dyb G, Hagen K, Svebak S, Holmen J. Analgesic use: a predictor of chronic pain and medication overuse headache: the Head-HUNT Study. *Neurology* 2003 Jul 22; 61(2):160.
- Stovner Lj, Hagen K, Jensen R, Katsarava Z, Lipton R, Scher A et al. The global burden of headache: a documentation of headache prevalence and disability worldwide. *Cephalalgia* 2007;27(3):193–210.
- Zeeberg P, Olesen J, Jensen R. Probable medication-overuse headache: the effect of a 2-month drug-free period. *Neurology* 2006;66(12):1894–98.
- Diener H-C, Katsarava Z. Analgesic/abortive overuse and misuse in chronic daily headache. *Curr Pain Headache Rep* 2001;5(6):545–50.
- Pascual J, Colás R, Castillo J. Epidemiology of chronic daily headache. *Curr Pain Headache Rep* 2001; 5(6):529.
- Diener, HC, Tfelt-Hansen, P. Headache associated with chronic use of substances. In: Olesen, J, Tfelt-Hansen, P, Welch, KMA (Eds). *The Headaches*, New York: Raven Press;1993. P.721.
- Zwart JA, Dyb G, Hagen K, Svebak S, Stovner LJ, Holmen J. Analgesic overuse among subjects with headache, neck, and low-back pain. *Neurology* 2004; 62(9):1540.
- Castillo J, Muñoz P, Guitera V, Pascual J. Kaplan Award 1998. Epidemiology of chronic daily headache in the general population. *Headache* 1999; 39(3):190.
- Diener, HC, Limmroth, V, Katsarava, Z. Medication-Overuse Headache. In: Goadsby, PJ, Dodick, DW (Eds). *Chronic daily headache for clinicians*, Ontario: Decker Hamilton; 2005: 117.
- Obermann M, Katsarava Z. Management of medication-overuse headache. *Expert Rev Neurother* 2007; 7(9): 1145.
- Bigal ME, Serrano D, Buse D, Scher A, Stewart WF, Lipton RB. Acute migraine medications and evolution from episodic to chronic migraine: a longitudinal population-based study. *Headache* 2008;48(8):1157–68.
- Bigal ME, Serrano D, Buse D, Scher A, Stewart WF, Lipton RB. Acute migraine medications and evolution from episodic to chronic migraine: a longitudinal population-based study. *Headache* 2008; 48(8):1157.
- Bigal ME, Lipton RB. Excessive acute migraine medication use and migraine progression. *Neurology* 2008; 71(22):1821.
- Bigal ME, Rapoport AM, Sheftell FD, Tepper SJ, Lipton RB. Transformed migraine and medication overuse in a tertiary headache centre—clinical characteristics and treatment outcomes. *Cephalalgia* 2004; 24(6):483.
- Limmroth V, Katsarava Z, Fritsche G, Przywara S, Diener HC. Features of medication overuse headache following overuse of different acute headache drugs. *Neurology* 2002; 59(7):1011.

29. Diener, HC, Limmroth V, Katsarava, Z. Medication Overuse Headache. In: Goadsby, PJ, Dodick, DW (Eds). Chronic daily headache for clinicians. Ontario: Decker Hamilton; 2005: 117.
30. Meskunas CA, Tepper SJ, Rapoport AM, Sheftell FD, Bigal ME. Medications associated with probable medication overuse headache reported in a tertiary care headache center over a 15-year period. *Headache* 2006; 46(5):766.
31. Limmroth V, Katsarava Z, Fritsche G, Przywara S, Diener HC. Features of medication overuse headache following overuse of different acute headache drugs. *Neurology* 2002 Oct 8; 59(7):1011.
32. Headache Classification Subcommittee of the International Headache Society. The International Classification of Headache Disorders: 2nd edition. *Cephalalgia* 2004; 24 Suppl 1:9.
33. Headache Classification Committee, Olesen J, Bousser MG, Diener HC, Dodick D, First M, Goadsby PJ, et al. New appendix criteria open for a broader concept of chronic migraine. *Cephalalgia* 2006; 26(6):742.
34. Diener HC, Limmroth V. Medication-overuse headache: a worldwide problem. *Lancet Neurol* 2004; 3(8):475.
35. Boes CJ, Black DF, Dodick DW. Pathophysiology and management of transformed migraine and medication overuse headache. *Semin Neurol* 2006; 26(2):232.