BRIEF REPORT

The International Classification of Headache Disorders, 2nd Edition (ICHD-II)—revision of criteria for 8.2 *Medication-overuse headache*

SD Silberstein, J Olesen, M-G Bousser, H-C Diener, D Dodick, M First, PJ Goadsby, H Göbel, MJA Lainez, JW Lance, RB Lipton, G Nappi, F Sakai, J Schoenen & TJ Steiner on behalf of the International Headache Society

Cephalalgia

Silberstein SD, Olesen J, Bousser M-G, Diener H-C, Dodick D, First M, Goadsby PJ, Göbel H, Lainez MJA, Lance JW, Lipton RB, Nappi G, Sakai F, Schoenen J & Steiner TJ on behalf of the International Headache Society. The International Classification of Headache Disorders, 2nd Edition (ICHD-II)—revision of criteria for 8.2 *Medication-overuse headache*. Cephalalgia 2005; 25:460–465. London. ISSN 0333-1024

☐*Classification, headache disorders, medication-overuse headache*

Stephen D Silberstein MD, Professor of Neurology, Thomas Jefferson University, Philadelphia, PA, USA. *Received 30 June 2004, accepted 29 July 2004*

Introduction

The ICHD-II criteria for 8.2 *Medication-overuse headache* have been revised based on constructive criticism at the International Headache Research Seminar in Copenhagen in March 2004. The major changes are: (i) elimination of the headache characteristics; and (ii) a new subform (8.2.6 *Medication-overuse headache attributed to combination of acute medications*) that takes into account patients overusing medications of different classes but not any single class.

The revised section is below.

8. Headache attributed to a substance or its withdrawal

8.2 Medication-overuse headache (MOH)
- 8.2.1 Ergotamine-overuse headache
- 8.2.2 Triptan-overuse headache
- 8.2.3 Analgesic-overuse headache
- 8.2.4 Opioid-overuse headache
- 8.2.5 Combination analgesic-overuse headache
- 8.2.6 Medication-overuse headache attributed to combination of acute medications
- 8.2.7 Headache attributed to other medication overuse
- 8.2.8 Probable medication-overuse headache

General comment

Definite or probable? In the particular case of 8.2 *Medication-overuse headache*, a period of 2 months after cessation of overuse is stipulated in which improvement (resolution of headache, or reversion to its previous pattern) must occur if the diagnosis is to be definite. Prior to cessation, or pending improvement within 2 months after cessation, the diagnosis 8.2.8 *Probable medication-overuse headache* should be applied. If such improvement does not then occur within 2 months, this diagnosis must be discarded.

8.2 Medication-overuse headache (MOH)

Previously used terms

Rebound headache, drug-induced headache, medication-misuse headache.

Diagnostic criteria

A Headache[1] present on ≥15 days/month fulfilling criteria C and D.

[1]The headache associated with medication overuse is variable and often has a peculiar pattern with characteristics shifting, even within the same day, from migraine-like to those of tension-type headache.

B Regular overuse[2] for >3 months of one or more drugs that can be taken for acute and/or symptomatic treatment of headache.[3]
C Headache has developed or markedly worsened during medication overuse.
D Headache resolves or reverts to its previous pattern within 2 months after discontinuation of overused medication.

Comments

MOH is an interaction between a therapeutic agent used excessively and a susceptible patient. The best example is overuse of symptomatic headache drugs causing headache in the headache-prone patient. By far the most common cause of migraine-like headache occurring on ≥15 days per month and of a mixed picture of migraine-like and tension-type-like headaches on ≥15 days per month is overuse of symptomatic antimigraine drugs and/or analgesics. Chronic tension-type headache is less often associated with medication overuse but, especially amongst patients seen in headache centres, episodic tension-type headache has commonly become a chronic headache through overuse of analgesics.

Patients with a pre-existing primary headache who develop a new type of headache or whose migraine or tension-type headache is made markedly worse during medication overuse should be given both the diagnosis of the pre-existing headache and the diagnosis of 8.2 *Medication-overuse headache*.

The diagnosis of MOH is clinically extremely important because patients rarely respond to preventative medications whilst overusing acute medications.

8.2.1 Ergotamine-overuse headache

Diagnostic criteria

A Headache fulfilling criteria A, C and D for 8.2 *Medication-overuse headache*.
B Ergotamine intake on ≥10 days/month on a regular basis for >3 months.

Comment

Bioavailability of ergots is so variable that a minimum dose cannot be defined.

8.2.2 Triptan-overuse headache

Diagnostic criteria

A Headache fulfilling criteria A, C and D for 8.2 *Medication-overuse headache*.
B Triptan intake (any formulation) on ≥10 days/month on a regular basis for >3 months.

Comment

Triptan overuse may increase migraine frequency to that of chronic migraine. Evidence suggests that this occurs sooner with triptan overuse than with ergotamine overuse.

8.2.3 Analgesic-overuse headache

Diagnostic criteria

A Headache fulfilling criteria A, C and D for 8.2 *Medication-overuse headache*.
B Intake of simple analgesics on ≥15 days/month[4] on a regular basis for >3 months.

8.2.4 Opioid-overuse headache

Diagnostic criteria

A Headache fulfilling criteria A, C and D for 8.2 *Medication-overuse headache*.
B Opioid intake on ≥ 10 days/month on a regular basis for >3 months.

Comment

Prospective studies indicate that patients overusing opioids have the highest relapse rate after withdrawal treatment.

8.2.5 Combination analgesic-overuse headache

Diagnostic criteria

A Headache fulfilling criteria A, C and D for 8.2 *Medication-overuse headache*.
B Intake of combination analgesic medications[5] on ≥10 days/month on a regular basis for >3 months.

[2]Overuse is defined in terms of duration and treatment days per week. What is crucial is that treatment occurs both frequently and regularly, i.e. on 2 or more days each week. Bunching of treatment days with long periods without medication intake, practised by some patients, is much less likely to cause medication-overuse headache and does not fulfil criterion B.

[3]MOH can occur in headache-prone patients when acute headache medications are taken for other indications.

[4]Expert opinion rather than formal evidence suggests that use on ≥15 days/month rather than ≥10 days/month is needed to induce analgesic-overuse headache.

[5]Combinations typically implicated are those containing simple analgesics combined with opioids, butalbital and/or caffeine.

8.2.6 Medication-overuse headache attributed to combination of acute medications

Diagnostic criteria

A Headache fulfilling criteria A, C and D for 8.2 *Medication-overuse headache*.
B Intake of any combination of ergotamine, triptans, analgesics and/or opioids on ≥10 days/month on a regular basis for >3 months without overuse of any single class alone.[6]

8.2.7 Headache attributed to other medication overuse

Diagnostic criteria

A Headache fulfilling criteria A, C and D for 8.2 *Medication-overuse headache*.
B Regular overuse[7] for >3 months of a medication other than those described above.

8.2.8 Probable medication-overuse headache

Diagnostic criteria

A Headache fulfilling criteria A and C for 8.2 *Medication-overuse headache*.
B Medication overuse fulfilling criterion B for any one of the subforms 8.2.1–8.2.7.
C One or other of the following:

1 Overused medication has not yet been withdrawn.
2 Medication overuse has ceased within the last 2 months but headache has not so far resolved or reverted to its previous pattern.

Comments

Codable subforms of 8.2.8 *Probable medication-overuse headache* are 8.2.8.1 *Probable ergotamine-overuse headache*, 8.2.8.2 *Probable triptan-overuse headache*, 8.2.8.3 *Probable analgesic-overuse headache*, 8.2.8.4 *Probable opioid-overuse headache*, 8.2.8.5 *Probable combination analgesic-overuse headache*, 8.2.8.6 *Headache probably attributed to overuse of acute medication combinations* and 8.2.8.7 *Headache probably attributed to other medication overuse*.

Many patients fulfilling the criteria for 8.2.8 *Probable medication-overuse headache* also fulfil criteria for either 1.6.5 *Probable chronic migraine* or 2.4.3 *Probable chronic tension-type headache*. They should be coded for both until causation is established after withdrawal of the overused medication. Patients with 1.6.5 *Probable chronic migraine* should additionally be coded for the antecedent migraine subtype (usually 1.1 *Migraine without aura*).

[6]The specific subform(s) 8.2.1–8.2.5 should be diagnosed if criterion B is fulfilled in respect of any one or more single class(es) of these medications.
[7]The definition of overuse in terms of treatment days per week is likely to vary with the nature of the medication.

Copyright

Bibliography

Ala-Hurula V, Myllyla V, Hokkanen E. Ergotamine abuse: results of ergotamine discontinuation with special reference to the plasma concentrations. Cephalalgia 1982; 2:189–95.

Ala-Hurula V, Myllyla V, Hokkanen E, Tokola O. Tolfenamic acid and ergotamine abuse. Headache 1981; 21:240–2.

Allgulander C. History and current status of sedative-hypnotic drug use and abuse. Acta Psychiatr Scand 1986; 73:465–78.

Andersson PG. Ergotamine headache. Headache 1975; 15:118–21.

Baar HA. Treatment for headache: a four-step standardized withdrawal program for analgesic abusers. Pain Clin 1990; 3:173–7 (Abstract).

Bennett WM, DeBroe ME. Analgesic nephropathy: a preventable renal disease. N Engl J Med 1989; 320:1269–71.

Bowdler I, Killian J, Gänsslen–Blumberg S. The association between analgesic abuse and headache—coincidental or causal. Headache 1988; 28:494.

Braithwaite RA. The toxicity of tricyclic and newer antidepressants. In: DeWolff FA, editor. Handbook of clinical neurology. New York: Elsevier Science, 1995:311–20.

Brust JC. Opiate addiction and toxicity, Chapter 16. In: DeWolff FA, editor. Handbook of clinical neurology, Vol. 65. New York: Elsevier Science, 1995:356–61.

Catarci T, Fiacco F, Argentino C. Ergotamine-induced headache can be sustained by sumatriptan daily intake. Cephalalgia 1994; 14:374–5.

Centonze V, Polite BM, diBari M, Caporaletti P, Albano O. Vascular injuries in ergotamine abuse: a case report. Funct Neurol 1993; 8:265–70.

Dalquen P, Fasel J, Mihatsch MJ, Rist M, Rutishauser G. Phenacetinabusus IV. Sind zytologische Harnuntersuchungen in der Tumorvorsorge bei Phenacetinabusern erfolgversprechend und anwendbar. Schweizerische Med Wochenschr 1980; 110:302–6.

DeBroe ME, Elseviers MM. Analgesic nephropathy—still a problem? Nephron 1993; 64:505–13.

deMarinis M, Janiri L, Agnoli A. Headache in the use and withdrawal of opiates and other associated substances of abuse. Headache 1991; 31:159–63.

Diamond S, Dalessio DJ. Drug abuse in headache. In: Diamond S, Dalessio DJ editors. The practicing physician's approach to headache. Baltimore: Williams & Wilkins, 1982:114–21.

Dichgans J, Diener. Clinical manifestations of excessive use of analgesic medication. In: Diener HC, Wilkinson M editors. Drug-induced headache. Berlin: Springer-Verlag, 1988:8–15.

Dichgans J, Diener HD, Gerber WD et al. Analgetika-induzierter dauerkopfschmerz. Dtsch Med Wschr 1984; 109:369–73.

Diener HC. A personal view of the classification and definition of drug dependence headache. Cephalalgia 1993; 13:68–71.

Diener HC, Dahlof CG. Headache associated with chronic use of substances. In: Olesen J, Tfelt-Hansen P, Welch KMA editors. The headaches. Philadelphia: Lippincott Williams & Wilkins, 1999:871–8.

Diener HC, Dichgans J, Scholz E, Geiselhart S, Gerber WD, Bille A. Analgesic-induced chronic headache: long-term results of withdrawal therapy. J Neurol 1989; 236:9–14.

Diener HC, Haab J, Peters C, Ried S, Dichgans J, Pilgrim A. Subcutaneous sumatriptan in the treatment of headache during withdrawal from drug-induced headache. Headache 1991; 31:205–9.

Diener HC, Pfaffenrath V, Soyka D, Gerber WD. Therapie des medikamenten-induzierten dauerkopfschmerzes. Münch Med Wschr 1992; 134:159–62.

Diener HC, Tfelt-Hansen P. Headache associated with chronic use of substances. In: Olesen J, Tfelt-Hansen P, Welch KMA editors. The headaches. New York: Raven Press Ltd, 1993:721–7.

Dige-Petersen H, Lassen NA, Noer J, Toennesen KH, Olesen J. Subclinical ergotism. Lancet 1977; i:65–6.

Drucker P, Tepper S. Daily sumatriptan for detoxification from rebound. Headache 1998; 38:687–90.

Dubach UC, Rosner B, Pfister E. Epidemiologic study of abuse of analgesics containing phenacetin. Renal morbidity and mortality 1968–1979. N Engl J Med 1983; 308:357–62.

Elkind AH. Drug abuse in headache patients. Clin J Pain 1989; 5:111–20.

Elkind AH. Drug abuse and headache. Med Clin N Am 1991; 75:717–32.

Evers S, Gralow I, Bauer B, Suhr B, Buchheister A, Husstedt IW et al. Sumatriptan and ergotamine overuse and drug-induced headache: a clinicoepidemiologic study. Clin Neuropharmacol 1999; 22:201–6.

Fanciullaci M, Alessandri M, Pietrini U, Briccolani-Bandini E, Beatrice S. Long-term ergotamine abuse: effect on adrenergically induced mydriasis. Clin Pharm Ther 1992; 51:302–7.

Fincham JE. Over-the-counter drug use and misuse by the ambulatory elderly: a review of the literature. J Ger Drug Ther 1987; 1:3–21.

Fincham RW, Perdue Z, Dunn VD. Bilateral focal cortical atrophy and chronic ergotamine abuse. Neurology 1985; 35: 720–2.

Fisher CM. Analgesic rebound headache refuted. Headache 1988; 28:666.

Friedman AP, Brazil P, vonStorch TJ. Ergotamine tolerance in patients with migraine. JAMA 1955; 157:881–4.

Gaist D, Hallas J, Sindrup SH, Gram LF. Is overuse of sumatriptan a problem? A population-based study. Eur J Clin Pharmacol 1996; 50:161–5.

Gaist D, Tsiropoulus I, Sindrup SH, Hallas J, Rasmussen BK, Kragstrup J. Inappropriate use of sumatriptan: population based register and interview study. Br J Med 1998; 316:1352–3.

Granella F, Farina S, Malferrari G, Manzoni GC. Drug abuse in chronic headache: a clinicoepidemiologic study. Cephalalgia 1987; 7:15–9.

Gutzwiller F, Zemp E. Der Analgetikakonsum in der Bevölkerung und socioökonomische Aspekte des Analgetikaabusus. In: Mihatsch MJ editor. Das Analgetikasyndrom. Stuttgart: Thieme, 1986:197–205.

Hering R, Steiner TJ. Abrupt outpatient withdrawal from medication in analgesic-abusing migraineurs. Lancet 1991; 337:1442–3.

Hokkanen E, Waltimo O, Kallanranta T. Toxic effects of ergotamine used for migraine. Headache 1978; 18:95–8.

Horowski R, Ziegler A. Possible pharmacological mechanisms of chronic abuse of analgesics and other antimigraine drugs. In: Diener HC, Wilkinson M editors. Drug-induced headache. Berlin: Springer-Verlag, 1988:95–104.

Horton BT, Peters GA. Clinical manifestations of excessive use of ergotamine preparations and management of withdrawal effect: report of 52 cases. Headache 1963; 3:214–26.

Isler H. Migraine treatment as a cause of chronic migraine. In: Rose FC editor. Advances in migraine research and therapy. New York: Raven Press, 1982:159–64.

Jaffe JH. Drug addiction and drug abuse. In: Gilman AG, Rall TW, Nies AS, Taylor P editors. The pharmacological basis of therapeutics. New York: Pergamon Press, 1985:522–73.

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; 57:1694–8.

Kaube H, May A, Diener HC, Pfaffenrath V. Sumatriptan misuse in daily chronic headache. Br Med J 1994; 308:1573.

Kielholz P, Ladewig D. Probleme des medikamentenmi betabrauches. Schweiz Arztezeitung 1981; 62:2866–9.

Klapper JA. Rebound headache: definition, symptomatology, treatment, and prevention. Headache Q 1992; 3:398–402.

Kouyanou K, Pither CE, Rabe-Hesketh S, Wessely S. A comparative study of iatrogenesis, medication abuse, and psychiatric morbidity in chronic pain patients with and without medically explained symptoms. Pain 1998; 76:417–26.

Kudrow L. Paradoxical effects of frequent analgesic use. Adv Neurol 1982; 33:335–41.

Lader M. Hypnotics and sedatives. In: DeWolff FA editor. Handbook of clinical neurology. New York: Elsevier Science, 1995:329–55.

Lance F, Parkes C, Wilkinson M. Does analgesic abuse cause headache de novo? Headache 1988; 28:61–2.

Lance JW. A concept of migraine and the search for the ideal headache drug. Headache 1990; 30:17–23.

Limmroth V, Kazarawa S, Fritsche G, Diener HC. Headache after frequent use of new 5-HT agonists zolmitriptan and naratriptan. Lancet 1999; 353:378.

Limmroth V, Katsarava Z, Fritsche G, Przywara S, Diener HC. Features of medication overuse headache following overuse of different acute headache drugs. Neurology 2002; 59:1011–4.

Lucas RN, Falkowski W. Ergotamine and methysergide abuse in patients with migraine. Br J Psychiatry 1973; 122:199–203.

Ludolph AC, Husstedt IW, Schlake HP, Grotemeyer KH, Brune GG. Chronic ergotamine abuse: evidence of functional impairment of long ascending spinal tracts. Eur Neurol 1988; 28:311–6.

MacGregor EA, Vorah C, Wilkinson M. Analgesic use: a study of treatments used by patients for migraine prior to attending the City of London migraine clinic. Headache 1990; 30:634–8.

Manzoni GC, Micieli G, Granella F, Sandrini G, Zanferrari C, Nappi G. Therapeutic approach to drug abuse in headache patients. In: Diener HC, Wilkinson M editors. Drug-induced headache. Berlin: Springer-Verlag, 1988:143–9.

Marks V. Reactive (rebound) hypoglycemia). In: Marks V, Rose CF editors. Hypoglycemia. Oxford: Blackwell, 1981:179–217.

Mathew NT. Amelioration of ergotamine withdrawal symptoms with naproxen. Headache 1987; 27:130–3.

Mathew NT, Kurman R, Perez F. Drug induced refractory headache—clinical features and management. Headache 1990; 30:634–8.

Michultka DM, Blanchard EB, Appelbaum KA, Jaccard J, Dentinger MP. The refractory headache patient—2. High medication consumption (analgesic rebound) headache. Behav Res Ther 1989; 27:411–20.

Micieli G, Manzoni GC, Granella F, Martignoni E, Malferrari G, Nappi G. Clinical and epidemiological observations on drug abuse in headache patients. In: Diener HC, Wilkinson M editors. Drug-induced headache. Berlin: Springer-Verlag, 1988:20–8.

Nicolodi M, DelBianco PL, Sicuteri F. The way to serotonergic use and abuse in migraine. Int J Clin Pharmacol Res 1997; 17:79–84.

Page H. Rebound headache from ergotamine withdrawal. JAMA 1981; 246:719.

Peters G, Horton BT. Headache: with special reference to the excessive use of ergotamine preparations and withdrawal effects. Proc Mayo Clin 1951; 26:153–61.

Pini LA, Trenti T. Case report: does chronic use of sumatriptan induce dependence? Headache 1994; 34:600–1.

Pradalier A, Dry S, Baron JF. Cephalée induite par l'abuse de tartrate d'ergotamine chez les migrainieux. Concours Méd 1984; 106:106–10.

Rahman A, Segasothy M, Samad SA, Zulfiqar A, Rani M. Analgesic use and chronic renal disease in patients with headache. Headache 1993; 33:442–5.

Rapoport A, Stang P, Gutterman DL, Cady R, Markley H, Weeks R et al. Analgesic rebound headache in clinical practice: data from a physician survey. Headache 1996; 36:14–9.

Rapoport AM. Analgesic rebound headache. Headache 1988; 28:662–5.

Rapoport AM, Weeks RE. Characteristics and treatment of analgesic rebound headache. In: Diener HC, Wilkinson M editors. Drug-induced headache. Berlin: Springer-Verlag, 1988:162–7.

Roswell AR, Neylan C, Wilkinson M. Ergotamine induced headache in migrainous patients. Headache 1973; 13:65–7.

Sandler DP, Smith JC, Weinberg CR, Buckalew VM, Dennis VW, Blythe WB, Burgess WP. Analgesic use and chronic renal disease. N Engl J Med 1989; 320:1238–43.

Saper JR. Drug abuse among headache patients. In: Saper JR editor. Headache disorders. Boston: PSG Publishers, 1983:263–78.

Saper JR. Drug overuse among patients with headache. Neurol Clin 1983; 1:465–77.

Saper JR. Daily chronic headaches. Neurol Clin N Am 1990; 8:891–902.

Saper JR, Jones JM. Ergotamine tartrate dependency: features and possible mechanisms. Clin Neuropharmacol 1986; 9:244–56.

Schnider P, Aull S, Baumgartner C et al. Long-term outcome of patients with headache and drug abuse after inpatient withdrawal: five-year followup. Cephalalgia 1996; 16:481–5.

Schnider P, Aull S, Feucht M. Use and abuse of analgesics in tension-type headache. Cephalalgia 1994; 14:162–7.

Schnider P, Maly J, Grunberger J, Aull S, Zeiler K, Wessely P. Improvement of decreased critical flicker frequency in headache patients with drug abuse after successful withdrawal. Headache 1995; 35:269–72.

Schoenen J, Lenarduzzi P, Sianard-Gainko J. Chronic headaches associated with analgesics and/or ergotamine abuse: a clinical survey of 434 consecutive outpatients. In: Rose FD editor. New advances in headache research. London: Smith-Gordon, 1989: 29–43.

Seller EM, Busto UE, Kaplan HL, Somer G, Baylon GJ. Comparative abuse liability of codeine and naratriptan. Clin Pharmacol Ther 1998; 63:121.

Shakir RA. Vitamin toxicity. In: DeWolff FA editor. Handbook of clinical neurology, Vol. 65. New York: Elsevier Science, 1995:567–76.

Silberstein SD, Lipton. Chronic daily headache. In: Goadsby PJ, Silberstein SD editors. Headache. Newton: Butterworth-Heinemann, 1997:201–25.

Silberstein SD, Lipton RB, Solomon S, Mathew NT. Classification of daily and near daily headaches: proposed revisions to the IHS classification. Headache 1994; 34:1–7.

Silberstein SD, Silberstein JR. Chronic daily headache: prognosis following inpatient treatment with repetitive IV DHE. Headache 1992; 32:439–45.

Stewart JH. Analgesic abuse and renal failure in Australia. Kidney Int 1978; 13:72–8.

Sullivan JT, Sellers EM. Treatment of the barbiturate abstinence syndrome. Med J Aust 1986; 145:456–8.

Taschner KL, Wiesbeck GA. Psychiatric aspects of drug addiction of the barbiturate-alcohol type. In: Diener HC, Wilkinson M editors. Drug-induced headache. Berlin: Springer-Verlag, 1988:80–4.

Tfelt-Hansen P. Ergotamine headache. In: Pfaffenrath V, Lundberg P, Sjaastad O editors. Updating in headache. Berlin: Springer, 1985:169–72.

Tfelt-Hansen P. The effect of ergotamine on the arterial system in man. Acta Pharmacol Toxicol 1986; 59:1–29.

Tfelt-Hansen P, Krabbe AA. Ergotamine. Do patients benefit from withdrawal? Cephalalgia 1981; 1:29–32.

Tfelt-Hansen P, Olesen J. Arterial response to ergotamine tartrate in abusing and non-abusing migraine patients. Acta Physiol Scand 1981; 48:69–72.

Tfelt-Hansen P, Paalzow L. Intramuscular ergotamine: plasma levels and dynamic activity. Clin Pharmacol Ther 1985; 37:29–35.

Tfelt-Hansen PPR, Saxena, Ferrari. Ergot alkaloids. In: DeWolff FA editor. Handbook of clinical neurology. New York: Elsevier Science, 1995:61–7.

Timmings PL, Richens. Neurotoxicology of antiepileptic drugs. In: DeWolff FA editor. Handbook of clinical neurology. New York: Elsevier Science, 1995:495–513.

Vasconcellos E, Pina-Garza JE, Millan EJ, Warner JS. Analgesic rebound headache in children and adolescents. J Child Neurol 1998; 13:443–7.

Verhoeff NPLG, Visser WH, Ferrari MD, Saxena PR, van Royen EA. Dopamine D2 receptor imaging with 123-I-iodobenzamide SPECT in migraine patients abusing ergotamine: does ergotamine cross the blood brain barrier. Cephalalgia 1993; 13:325–9.

VonKorff M, Galer BS, Stang P. Chronic use of symptomatic headache medications. Pain 1995; 62:179–86.

Walker J, Parisi S, Olive D. Analgesic rebound headache: experience in a community hospital. Southern Med J 1993; 86:1202–5.

Warner JS. Rebound headaches: a review. Headache Q 1999; 10:207–19.

Zed PJ, Loewen PS, Robinson G. Medication-induced headache: overview and systematic review of therapeutic approaches. Ann Pharmacother 1999; 33:61–72.

Ziegler DK. Opiate and opioid use in patients with refractory headache. Cephalalgia 2000; 14:5–10.