CASE REPORT

Intravenous lidocaine for inducing remission of cluster period

Lidocaína intravenosa como indutor de remissão de surto de cefaleia em salvas

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ABSTRACT

Cluster headache is a rare clinical condition, classified by the IHS as a trigeminal autonomic cephalalgia. Some known abortive treatments are inhaled oxygen, subcutaneous sumatriptan, intravenous dihydroergotamine and intranasal lidocaine. However, previous case reports suggest that intravenous lidocaine may play a role in the treatment of cluster headache attacks. We describe a patient with refractory cluster headache, whose condition remitted after the use of intravenous lidocaine. Therapy with lidocaine was conducted without harm, and the remission after a "single shot" suggested this approach to be safe and desirable to be tried in patients with cluster headache..

Keywords: Intravenous lidocaine; Cluster headache

RESUMO

A cefaleia em salvas é uma rara condição clínica que faz parte das cefaleias trigêmino-autonômicas. Há alguns tratamentos abortivos descritos na literatura, como oxigênio inalatório, sumatriptana subcutânea, dihidroergotamina e lidocaína intranasal. Relatos de caso sugerem o uso da lidocaína intravenosa como terapêutica destas crises. Descrevemos um caso de portador de cefaléia em salvas forma refratária, cuja condição remitiu ao uso de lidocaína endovenosa. A resposta evidenciada sugere que um tratamento do tipo "single shot" com lidocaína endovenosa é seguro e desejável para os portadores de cefaleia em salvas.

Palavras-chave: Lidocaína endovenosa; Cefaleia em salvas

INTRODUÇÃO

Cluster headache is an uncommon condition, most prevalent in men and classified by the IHS as a trigeminal autonomic cephalalgias, term originally coined by Goadsby and Lipton, in 1997.[1,2] It is characterized by attacks of headache (orbital, retro-orbital or temporal) and are accompanied by autonomic symptoms, that last from 30 to 180 minutes, at a frequency that ranges from one crisis each other day up to eight crises per day during the cluster period, frequently with a circadian periodicity of the attacks, and a circannual periodicity of the cluster periods.[2]

Some therapies have been recommended for treatment of cluster headache attacks, such as inhaled oxygen, subcutaneous sumatriptan, intravenous dihydroergotamine and intranasal lidocaine.[3] Intravenous lidocaine was reported to be effective in the acute control of attacks of SUNCT syndrome (Severe Unilateral Neuralgiform Headache with Conjunctival Injection and Tearing), another type of trigeminal autonomic cephalalgia.[4,5] However, its use on the treatment of cluster headache attacks was reported in a few papers, and remains largely unknown.[6,7]

We describe a case of a refractory cluster headache patient, whose condition remitted after the use of intravenous lidocaine.

CASE REPORT

The patient was a 49 year-old male, who has been suffering from cluster headache since the age of 37. The intensity and frequency of his cluster headache attacks had progressively worsened in the last seven years. There was no history of remission periods exceeding 30 days in the last year. At the time of his admission, he was using topiramate 75 mg o.d. and naratriptan 2.5 mg b.i.d.. Twenty milliliters of lidocaine 2% diluted in 240 mL of dextrose 0.5% were infused at 60 mL/h. During the infusion the patient was kept under cardiac monitoring. There were no adverse events. The patient had no headaches during the infusion period, and remained cluster headache-free at the follow-up, even after naratriptan withdrawal and after reduction of topiramate to 25 mg 1 b.i.d.. Discussion Lidocaine is a local anesthetic widely used in medical practice for regional anesthesia in peripheral and central neuropathic pain.[8,9] It can be administered by different routes: epidural, spinal, intramuscular, intrapleural, topical, intranasal and intravenous.[8] Intranasal lidocaine has been used as adjuvant treatment for attacks of cluster headache since 1985[10] and, similarly, was tried in the treatment of migraine.[11] While success is achieved in addressing these painful situations, this is not a usual practice.[10-13] In addition, other studies show the use of intravenous lidocaine to abort SUNCT attacks.[4,5] In 2004, Matharu[5] described four cases of SUNCT patients who showed disappearance of the headache during intravenous lidocaine administration. However, recurrence was observed approximately 15 to 20 minutes upon termination of the infusion.[5] Adverse events were reported by three patients and consisted of nausea and vomiting, depressive symptoms and paranoid ideation.[5] In two patients, SUNCT remitted for about a year after the intravenous administration of lidocaine and substitution of the previous prophylactic medications for topiramate.[5] Arroyo, in a 2010 double-blind study[4] demonstrated that intravenous lidocaine was superior to placebo in the treatment of SUNCT. These authors reinforced the need for patient monitoring during the intravenous administration of lidocaine.[4,5] Although the results suggest a good response to intravenous lidocaine as an abortive therapy of SUNCT, its mechanisms of action are still unclear.[4] In 1988, Maciewicz[6] reported the use of intravenous lidocaine for treating migraine and cluster headache attacks. In this report, the author found a significant reduction in pain intensity reported by patients with cluster headache.[6] He also suggested that the good result was due to the direct action of lidocaine in the trigeminal nociceptive input from local blood vessels.[6] Marmura, in 2009,[7] through a retrospective study on the use of intravenous lidocaine in 68 patients, two of whom were suffering from cluster headache, reported a 50% improvement of pain after administration of the anesthetic in these patients. Just as in SUNCT, lidocaine mechanism of action involved in termination of cluster headache attacks is unclear.[4,7] However, Leone (2009)[14] suggested cluster headache and SUNCT to share similar pathophysiological mechanisms. This assumption is due to the presence of hypothalamic activation in cluster headache and SUNCT as well as the positive response of both conditions to high-frequency hypothalamic stimulation.[14]

As summed up by Lauretti (2008)[9] "the final analgesic action of intravenous lidocaine reflects the multifactorial aspect of its action, resulting from the interaction with sodium channels, and direct or indirect interaction with different receptors and nociceptive transmission pathways such as muscarinic antagonism, glycine inhibiton, reduction in the production of excitatory amino acids, reduction in the production of thromboxane A2, release of endogenous opioids, reduction in neurokinins and release of adenosine triphosphate".

Finally, intravenous lidocaine was generally considered to be safe in this setting of administration, and may obviate the need for prolonged medical, semi-invasive or invasive therapies. Based upon the "single-shot" response observed in this case, prospective controlled double-blind studies to prove the efficacy of intravenous lidocaine in remission of symptoms of cluster headache are desirable.

REFERENCES

1. Fischera M, Marziniak M, Gralow I, Evers S. The incidence and prevalence of cluster headache: a meta-analysis of population-based studies. Cephalalgia. 2008;28(6):614-8.
2. Goadsby PJ, Cittadini E, Burns B, Cohen AS. Trigeminal autonomic cephalalgias: diagnostic and therapeutic developments. Curr Opin Neurol. 2008;21(3):323-30.
3. Cohen AS, Goadsby PJ. Prevention and treatment of cluster headache. Prog Neurol Psychiatry. 2009;13(3):9-16.
4. Arroyo Am, Durán XR, Beldarrain MG, Pinedo A, García-Moncó JC. Response to intravenous lidocaine in a patient with SUNCT syndrome. Cephalalgia. 2010;30(1):110-2.
5. Matharu MS, Cohen AS, Goadsby PJ. SUNCT syndrome responsive to intravenous lidocaine. Cephalalgia. 2004;24(11): 985-92.
6. Maciewicz R, Chung RY, Strassman A, Hochberg F, Moskowitz M. Relief of vascular headache with intravenous lidocaine: clinical observations and a proposed mechanism. Clin J Pain. 1988; 4:11-6.

7. Marmura M, Rosen N, Abbas M, Silberstein S. Intravenous lidocaine in the treatment of refractory headache: a retrospective case series. Headache. 2009;49(2):286-91. Erratum in Headache. 2009 May;49(5):803.
8. Heavner JE. Local anesthetics. Curr Opin Anaesthesiol. 2007;20(4):336-42.
9. Lauretti GR. Mechanisms of analgesia of intravenous lidocaine. Rev Bras Anestesiol. 2008;58(3):280-6. Article in English, Portuguese]
10. Kittrelle JP, Grouse DS, Seybold ME. Cluster headache: local anesthetic abortive agents. Arch Neurol. 1985;42(5):496-8.
11. Rapoport AM, Bigal ME, Tepper SJ, Sheftell FD. Intranasal medications for the treatment of migraine and cluster headache. CNS Drugs. 2004;18(10):671-85.
12. Costa A, Pucci E, Antonaci F, Sances G, Granella F, Broich G, Nappi G. The effect of intranasal cocaine and lidocaine on nitroglycerin-induced attacks in cluster headache. Cephalalgia. 2000;20(2):85-91.
13. Robbins L. Intranasal lidocaine for cluster headache. Headache. 1995;35(2):83-4.
14. Leone M, Bussone G. Pathophysiology of trigeminal autonomic cephalalgias. Lancet Neurol. 2009;8(8):755-64.

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