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The Challenge of Medication Overuse Headache

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COLUMN ARTICLE

Medication overuse headache (MOH) has been a big challenge for the pharmacotherapy of headache as it is prevalent and disabling headache [1]. According to report, there are approximately 1 to 2% of adult people suffering from MOH Worldwide [2]. However, the prevalence of MOH is much more common in patients with headache, which is as high as 11-70% in patients with persistent daily headache [3].

Medication overuse headache is considered as a secondary headache disorder caused by the exacerbation of the headache related with the overuse of analgesic drugs [4]. Although MOH can be induced by any kind of analgesics, it shows that the medications of combination analgesics, opioids as well as triptans are most related to MOH [5]. As these medications, such as opioids, are potent treatments for severe headache, the unacceptable side effect of MOH, which severely impacts the life quality of patient, results in the complication and challenge for the drug treatment of headache. Therefore, more study and effort in both preclinic and clinic are needed to understand the MOH and shed light on the solution for future treatment.

Although it is urgent to know the mechanism of the onset of MOH, the pathogeny of MOH is still not sufficiently understood. there is evidence which indicates that pathophysiology of MOH could be triggered by migraine brain and/or its genetic risk factors since MOH is uniquely present in patients who have cluster headache with an additional diagnosis of migraine or a family history of migraine [6]. Studies show that MOH is related to the atypical structure and function of brain areas associated with pain as well as addiction, and several investigations have displayed the "normalization" of function and structure of pain processing areas after cease of overused medication as well as recovery of MOH [7]. The changes of structure and morphology were also observed in MOH, and the reduction and increase of cortical volumes have been reported in patients with MOH [8]. Furthermore, the study showed that decreased cortical thickness was found in the left prefrontal cortex [8]. Recently, the changes of gray matter volume in brain regions of pain regulation were observed as maladaptation, which are typically reversible following effective treatment [4].

Moreover, neurobiological mechanism of primary headache also plays a role in the pathophysiology of MOH, as it is reported that cortical spreading depression, trigeminovascular system as well as neurotransmitters participate in the nociceptive pathway of MOH [1]. Therefore, it was assumed that sensitization as well as defective endogenous analgesic function could also involved in MOH [4].

There are several steps to treat MOH: educating patients to reduce the usage of acute medication by telling the association between the frequency of intake of acute medication and the risk of MOH [5]; Discontinuation the offending drug [1] as well as detoxification [5]. Prevention of migraine is also crucial as the patients with migraine background are prone to MOH [6].

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According to literature, the success rate of treatment can reach 50 - 70% [5].

However, a high rate of relapse is a hard challenging for MOH treatment, because it is reported that the relapse rates for MOH are as high as 41% [1]. In cases of relapse, the MOH induced by opioid overuse has higher relapse rates [5], which increases complexity of acute therapy as opioid is a robust medication for acute headache [9]. It is suggested that the relapse rates can be attenuated by patient education and medical care [5].

To ideally solve the suffering from MOH, more effort is needed to clarify the pathogeny of MOH and develop the new drug with more effectiveness and less adverse property in the future study.

BIBLIOGRAPHY

1. Cheung V., *et al*. "Medication overuse headache". *Current Neurology and Neuroscience Reports* 15.1 (2015): 509.
2. de Goffau MJ., *et al*. "The Effectiveness of Treatments for Patients With Medication Overuse Headache: A Systematic Review and Meta-Analysis". *Journal of Pain* 18.6 (2017): 615-627.
3. Westergaard ML., *et al*. "Prevalence of chronic headache with and without medication overuse: associations with socioeconomic position and physical and mental health status". *Pain* 155.10 (2014): 2005-2013.
4. Lai TH., *et al*. "Neuroimaging Findings in Patients with Medication Overuse Headache". *Current Pain and Headache Reports* 22.1 (2018): 1.
5. Diener HC., *et al*. "Medication-overuse headache: risk factors, pathophysiology and management". *Nature Reviews Neurology* 12.10 (2016): 575-583.
6. Paemeleire K., *et al*. "Medication-overuse headache in patients with cluster headache". *Neurology* 67.1 (2006): 109-113.
7. Schwedt TJ., *et al*. "Medication Overuse Headache: Pathophysiological Insights from Structural and Functional Brain MRI Research". *Headache* 57.7 (2017): 1173-1178.
8. Riederer F., *et al*. "Cortical Alterations in Medication-Overuse Headache". *Headache* 57.2 (2017): 255-265.
9. Levin M., *et al*. "Opioids in headache". *Headache* 54.1 (2014): 12-21.