

USE OF TOLPERISONE IN HEADACHE DUE TO POSTTRAUMATIC ENCEPHALOPATHY AT EMERGENCY CARE

Murat K. Almuhambetov¹; Elmira F. Almuhambetova¹; Sanzhar Zh. Ashimbekov^{1*}; Zhandos T. Tileuberdi¹

¹ Department of Emergency Medicine, Asfendiyarov Kazakh National Medical University, Almaty, Kazakhstan

ABSTRACT

Background: Headache is the most common symptom in different periods of traumatic brain injury (TBI) in all clinical forms, and any degree of brain damage. This article states information about the efficiency and safety of Mydocalm® (Tolperisone hydrochloride) in treating patients with post-traumatic headache at emergency care. **Methods:** The main group included 29 patients (15 males and 14 females), mean age (\pm SD) 23.8 ± 4.2 years old. The control group included 19 (10 males and 9 females), mean age (\pm SD) 22.9 ± 5.1 years old. Patients of main group took intramuscular injection of Mydocalm® at a dose of 100 mg (1 ml) and patients of control group took a standard therapy with non-narcotic analgesics (Paracetamol, Solpadeine), non-steroidal anti-inflammatory agents (Indomethacin, Aspirin per os). **Results:** The results revealed a decrease of pain syndrome in the main group and control group ($93.1 \pm 3.1\%$ and $78.9 \pm 2.8\%$, respectively), $p > 0.05$. Patients of the main group, while using Mydocalm®, was noted a lower rate of repeated calls to emergency medical service ($6.9 \pm 2.1\%$), in comparison with the control group, with standard treatment ($21.1 \pm 3.2\%$), $p > 0.05$. **Conclusion:** Clinical trial proved an efficiency of intramuscular injection of Mydocalm® (Tolperisone hydrochloride) to patients with post-traumatic headache at emergency care, which could allow emergency doctors to reserve pain more effectively and reduce the number of repeated calls to emergency medical service.

KEYWORDS

Cephalgia, Mydocalm®, Emergency Treatment, Central Muscle Relaxants, Analgesics

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INTRODUCTION

Pain is one of the most common causes of patients' calls for medical care. The frequency of appealability for medical care associated with pain is about 65% of total number of calls to the emergency medical service. Headache (cephalalgia) is one of the most common symptoms of various diseases. Anatomical structure, which is most often associated with the development of headaches, large circle of blood vessels in the brain, venous sinus of basal dura mater; V, IX, X cranial nerves; pain receptors - which are rich all the tissues of the scalp. In most cases, headache has vascular genesis, i. e. it's determined to spasm or dilatation in intra- and extra cranial arteries: migraine's various types and related vasomotor cephalgia, cerebrovascular disease, and headache caused by hypertension. Intense headache is induced by irritation of the meninges (meningitis, subarachnoid hemorrhage) [1,2,3,4]. Headache is the most common symptom in different periods of

traumatic brain injury (TBI) in all clinical forms, and various degrees of brain damage.

Choice of drug for the pain treatment gives precedence to drugs, which have the analgesic and marked muscle relaxant effects. High importance has full – fledged anesthesia, lasting effect and the degree of safety by the drugs at emergency care.

Mydocalm® was synthesized in 1955, and initially taking as a drug that increases peripheral blood flow, also has central acting muscle relaxant effect. As a result, the drug had gotten the status of a classic central acting muscle relaxant. After detailed study about the drug's actions and mechanisms was found inhibitory effect on the level of terminals in peripheral nerves, level of the spinal cord (decreasing pathologically increased reflex activity of the spinal cord) and level of the trunk, mostly at the caudal region in the reticular formation. The chemical affinity, with the drug Lidocaine, ensures an easy anesthetic effect. The drug reduces the muscle tone and muscle rigidity [5,6,7]. Mydocalm® is usually well tolerated. In some cases, there are feeling of light intoxication, headache, irritability, sleep disturbance. These

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* Address for Correspondence: Sanzhar Zh. Ashimbekov, 050063 Zhetysu District 22 f. 1, Almaty, Kazakhstan. Tel.: +7 707 122 7727; Email: ashimbekov@gmail.com

phenomena are disappeared by the dose reduction or temporary interruption at treatment.

According to previous clinical trials, at patients with post-traumatic, tension-type headache and vertebrogenic pain had been proven the efficiency and safety of Mydocalm ®, including patients with restrictions in using of medicines for elderly, or liver and kidney diseases [2, 3, 8, 9, 10, 11].

Despite the fact, that Mydocalm ® makes a good showing and effects on all pathogenic mechanisms of post-traumatic headaches, its exhibition is not sufficiently investigated at emergency care [12, 13].

METHODS

The aim of the study was to investigate Mydocalm ® (Tolperisone hydrochloride) in treating the syndrome of post-traumatic headache at emergency care.

For that end, in 2013-2014, was analyzed intramuscular injection of Mydocalm ® to patients, who sought to emergency medical service with post-traumatic headache.

The study was included 48 patients, who sought emergency medical service during the long term, with mild closed head injury, which long standing was from 1 to 3 years with a clinical syndrome of headache.

The main group included 29 patients (15 males and 14 females), mean age (\pm SD) 23.8 ± 4.2 years old. The control group included 19 (10 males and 9 females), mean age (\pm SD) 22.9 ± 5.1 years old. Diagnosis, with distant period of traumatic brain injury, is made according to the brain injury's classification and aftermaths caused by traumatic brain injury [4, 14]. Patients, who had other associated diseases and injuries, were excluded from the study. Neurologists followed up all patients. Thus, the groups were comparable in age, sex and etiology of pain.

Location, intensity, duration, nature and frequency of pain were analyzed by the survey, with the help of questionnaire, which was developed by us.

Mydocalm ® has a complex effect on the central nervous system (CNS): blocks polysynaptic spinal reflexes, reduces the toxicity by strychnine and suppresses reflex excitability. These properties of the drug Mydocalm ® bring it to the centrally acting

muscle relaxants [15, 16, 17]. It has been affirmed, that Mydocalm ® has a selective inhibitory effect on the caudal portion in the reticular formation of the brain, which caused decrease in spasticity; has central N-cholinolytic properties and no pronounced effect on the peripheral nervous system, also with weak spasmolytic and vasodilator effects [18,19]. Mydocalm ® has a vasodilator effect and used to relieve vasospasm, improve blood and lymph circulation and reduces adhesive activity of platelets. An important advantage, over other muscle relaxants, is the absence of sedation and muscle weakness in its exhibition [20, 21].

Patients of main group took intramuscular injection of Mydocalm ® at a dose of 100 mg (1 ml) and patients of control group took a standard therapy with non-narcotic analgesics (Paracetamol, Solpadeine), non-steroidal anti-inflammatory agents (Indomethacin, Aspirin per os).

RESULTS

The results of treatment were evaluated in 30 minutes, after intramuscular injection of Mydocalm ®. At the same time, the patients of main group, even after a single intramuscular dosing of Mydocalm ®, making by doctor of emergency medical service, was shown a decrease of pain syndrome ($93.1 \pm 3.1\%$ and $78.9 \pm 2.8\%$, respectively) (Fig. 1), $p > 0.05$, more frequently than in the control group. As we have noted, the highest efficacy by Mydocalm ® was observed at patients under the age of 30 years. While getting the drug, there were no side effects at patients.

Patients of the main group, while using Mydocalm ®, was noted a lower rate of repeated calls to emergency medical service ($6.9 \pm 2.1\%$), in comparison with the control group, with standard treatment ($21.1 \pm 3.2\%$), $p > 0.05$. It is also, an advantage for the using this drug at emergency care.

CONCLUSION

Clinical trial have proved an efficiency of intramuscular injection of Mydocalm ® (Tolperisone hydrochloride) to patients with post-traumatic headache at emergency care, which could allow emergency doctors to reserve pain more effectively and reduce the number of repeated calls to emergency medical service.

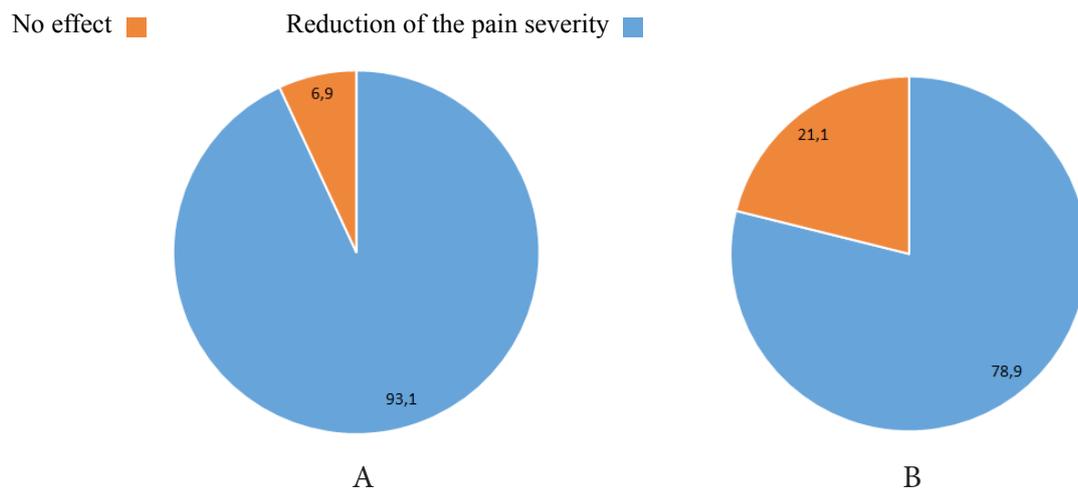


Figure 1 (A- the main group, B- the control group). Frequency of the pain severity in patients before and after treatment (%)

CONFLICT OF INTEREST

The authors confirm that this article content has no conflicts of interest.

AUTHOR CONTRIBUTION

All authors contributed to the study design, interpretation of the literature data, and the manuscript drafting. All authors read and approved the final version of the manuscript for publication.

ORCID

Murat K. Almuhambetov <http://orcid.org/0000-0002-3152-1904>

Elmira F. Almuhambetova <http://orcid.org/0000-0002-6301-5221>

Sanzhar Zh. Ashimbekov <http://orcid.org/0000-0002-0404-5471>

Zhandos T. Tileuberdi <http://orcid.org/0000-0001-7480-9927>

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