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Akut Migren Atağını Tedavi Etmede Büyük Oksipital Sinir ve Supraorbital Sinir Blokajının Etkinliği

Efficacy of Greater Occipital Nerve and Supraorbital Nerve Blockade in The Treatment of Acute Migraine Attack

Edip GÖNÜLLÜ[1], İlteriş Ahmet ŞENTÜRK[2], Hayriye GÖNÜLLÜ[3*]

[1] İzmir Bakircay University, Faculty of Medicine, Department of Algology, İzmir, TURKEY.
[2] University of Health Sciences, Bağcılar Training and Research Hospital, Department of Algology, İstanbul, TURKEY.
[3] İzmir Bakircay University, Faculty of Medicine, Department of Emergency Medicine, İzmir, TURKEY.
* **Sorumlu yazar:** Hayriye GÖNÜLLÜ;.E-mail: drhayriyegonullu@gmail.com.

ÖZET

Amaç: Migren primer baş ağrıları içinde en sık görülen, ciddi iş güç kaybına neden olan nörolojik bir bozukluktur. Akut migren atağının tedavisi ve profilaksisi genellikle medikal ajanlarla yapılmaktadır. Bununla birlikte akut atağın tedavisinde ve profilaksisinde perikraniyal sinir bloklarının etkinliği uzun yıllardır tecrübe edilmektedir. Bizde bu çalışmada medikal tedavi ile düzelmeyen akut migren atağını sonlandırmada bilateral büyük oksipital sinir ve supraorbital sinir blokajının etkinliğini araştırdık.

Materyal ve Metot: Bu geriye dönük çalışma yerel etik kurul onayı alındıktan sonra medikal tedaviye dirençli akut migren ataklı 191 hasta üzerinde yürütüldü. Hastaların tümüne bilateral büyük oksipital sinir bloğu yapıldı. Oksipital blok sonrası 5. Dakikada VAS (vizüel analog skala) 5'in altına düşmeyen hastalara supraorbital sinir bloğu uygulandı. 0. dk, 5. dk, 30. dk vizüel analog skala sonuçları değerlendirildi**.**

Bulgular: Olguların %76.96'sı kadın idi. Bilateral büyük oksipital sinir blokajı sonrası 5. dakika VAS değeri 5'in üzerinde olanlara ek olarak subraorbital sinir blokajı (% 22,51) uygulandı. Bilateral büyük oksipital sinir ve supraorbital sinir blokajını içeren perikraniyal sinir blokajının, olgularımızın % 97.4'ünde vizüel analog skala düzeyini iyileştirdiği görüldü (ortalama VAS; 5. dk: 1.3769±1.9746, 30. dk: 0.3979±1.3013).

Sonuç: Çalışmamız bulguları, akut migren atağı tedavisinde perikraniyal sinir blokajlarının yararlı olduğunu göstermektedir.

Anahtar Kelimeler: Migren, Büyük oksipital sinir, Supraorbital sinir, Blokaj.

ABSTRACT

Objective: Migraine is the most common neurological disorder among primary headaches that can cause loss of quality of life. Medical agents are generally used for the treatment and prophylaxis of acute migraine attack. However, the effectiveness of pericranial nerve blocks in the treatment and prophylaxis of acute attacks has been experienced for many years. In this study, we investigated the effectiveness of bilateral greater occipital nerve (GON) and supraorbital nerve (SON) blockade in terminating acute migraine attacks that did not improve with medical treatment.

Material and Method: In this retrospective study, 191 patients with acute migraine attacks resistant to medical treatment were evaluated. First GON block was applied to all patients, SON block was applied to patients whose visual analog scale (VAS) did not fall below '5' at the fifth minute after GON block. The zero, fifth and 30th minute VAS results were evaluated.

Results: 76.96 % of the patients were women. Subraorbital nerve blockade (22.51%) was applied in addition to those with a VAS value above 5 at the 5th minute after bilateral greater occipital nerve blockade. Pericranial nerve blockade including bilateral GON and SON blockade improved the VAS level in 97.4% of our cases (mean VAS; fifth min: 1.3769±1.9746, 30th min: 0.3979±1.3013).

Conclusion: The results of our study show that pericranial nerve blockages are beneficial in the treatment of acute migraine attacks.

Keywords: Migraine, Great occipital nerve, Supraorbital nerve, Blockage.

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INTRODUCTION

The World Health Organization (WHO) reports that migraine ranks sixth among the diseases that cause the most disability and that the number of migraine patients and their socioeconomic cost are increasing day by day (Goadsby et al., 2017). Migraine is characterized by unilateral and throbbing headache attacks, which affect women three times more often and worsen with visual, auditory, and

other stimuli that impair their quality of life (Headache Classification Committee of the International Headache Society, 2013; Öntürk Akyüz, 2021). In approximately one-third of migraine patients, attacks are associated with neurological deficits. The pathophysiology of migraine is complex, and opinions about it mostly focus on neural or vascular mechanisms (Goadsby et al., 2017).

Management of acute migraine attacks aims at rapid relief of pain. In most patients, simple analgesics are usually sufficient to control pain during an attack. However, some patients may be offered other drugs, such as migraine-specific 5-HT1B/1D receptor agonists (Gooriah et al., 2015).

Although peripheral nerve blocks targeting the occipital, auriculotemporal, supraorbital nerves (SON), and cervical spine have been mentioned for a long time in the treatment of primary headache disorders, they are not widely used in daily practice (Ruiz Piñero et al., 2016). The relationship between the fibers coming from cervical 1-2 in the brain stem and nerve fibers associated with the trigeminal nucleus and the pathogenesis of migraine has focused pericranial nerve blockades on these localizations (Çatav et al., 2017). In this study, we investigated the effect of greater occipital nerve (GON) and SON blocking methods on a visual analog scale (VAS) in the treatment of patients who applied to our algology outpatient clinic with migraine headaches.

MATERIAL and METHODS

Patient Population

This study was carried out retrospectively between 01.12.2011 and 01.04.2015 after the approval of the local ethics committee (16.04.2015 dated, version: 02). A total of 191 patients over the age of 18 who had an acute migraine attack that did not respond to medical treatment and who underwent pericranial nerve blockade were screened. Demographic characteristics of the patients were recorded on pre-prepared forms. The patients were informed about the VAS. Bilateral GON blockade was applied to all patients. SON blockade was applied to patients whose VAS value did not fall below '5' at the fifth minute after this procedure. It is a branch of nervus frontalis which is separated from the ophthalmic branch of nervus trigeminus, which is the 5th cranial pair. After the GON and SON blockade the zero, fifth, and 30th minutes VAS values of the patients were evaluated.

Procedure

For the intervention, 2 ml of 2% lidocaine and 2 ml of 0.5% bupivacaine were mixed. After the area was cleaned, the mixture containing local anesthetic was applied radially to GON which was 2 cm lateral and 2 cm below the protuberantia occipitalis externa. The VAS value at the fifth minute was 4 and above in 38 (19.9%) cases, and 6 and above in 5 (2.6%) cases at the 30th minute. Pericranial nerve blockade, including bilateral GON and SON blockade, was seen to terminate acute migraine attacks in 97.4% of our cases.

Statistical analysis

The data analysis was performed using IBM SPSS Statistics 15.0 (IBM Corp., Armonk, New York, ABD) software. Descriptive statistics were given as n, percentage (%), mean±standard deviation. Normality of continuous variables were evaluated by Shapiro Wilk test and Q-Q graphics. Paired samples t test was used to test VAS values. $p < 0.05$ value was considered statistically significant.

RESULTS

Of the cases, 147 (76.96%) were female and 44 (23.04%) were male. The pre-treatment (0th min) postreatment (5th, 30th minute) VAS scores of the cases are presented in Table 1. Bilateral GON blockade was applied to all of the patients, and SON blockade was additionally applied to 43 (22.51%) patients with a VAS value above 5 at the 5th minute. The VAS value at the 5th minute after GON blockade was 4 and above in 38 (19.9%) cases, and 6 and above in 5 (2.6%) patients at the 30th minute. Pericranial nerve blockade, including bilateral GON

and SON blockade, was seen to terminate acute migraine attack in 97.4% of our cases.

Table 1. VAS values of the patients

	Mean±St deviation	P
Age	39.74 ±11.50	
0. min VAS	7.7591±1.5909	
[2] 5. min VAS	1.3769±1.9746	<0.05
[1] 30. min VAS	0.3979±1.3013	<0.05

[1] Comparison of the tenth Min and the thirtieth Min

[2] Comparison of the fifth Min and the thirtieth Min

DISCUSSION

Headache control with the local anesthetic injection method to the GON has been applied for a long time ago (Alp and Alp, 2013). In previous studies, successful results were reported after local anesthetic injection to the GON and the peripheral branches of the trigeminal nerve during acute migraine attacks (Dimitriou et al., 2002; Young et al., 2008). Ambrosini et al (2015) emphasized that although the pathophysiology of migraine is due to a number of disorders in the central nervous system, pericranial nerve blockades that have an effect on neuronal modality may be effective in some patients. Especially in recent years, besides the medical treatment of acute migraine attack, pericranial nerve blockades have gained popularity and it has been emphasized that they are effective in ending the attack (Ruiz Piñero et al., 2016).

Alp and Alp (2013) found a significant decrease in the severity of pain after SON and infraorbital nerve blockade in the group of patients with headache (pre-procedure VAS value 9.0 ± 1.0, at the sixth month of treatment VAS value was 3.5 ± 3.6). In another study conducted in our country it was emphasized that recurrent GON blockades are effective in migraine prophylaxis (İnan et al., 2016; Takmaz-Akın et al., 2008). In our study, unlike these studies, we did not evaluate the prophylactic effect of pericranial nerve blockades. Bilateral GON local anesthetic blockade was applied to all patients whose pain control could not be achieved with medical treatment. Patients whose VAS value did not decrease to the desired level (22.5%) after the first procedure were administered SON blockade with local anesthetic once and it was found to be successful in curing acute headache attacks ($p<0.05$)

Dimitriou et al. (2002) reported that in 82% of 70 female patients with acute migraine attacks, migraine attacks ended after SON and trochlear nerve block. Healing of the pain started in the third-fourth minutes of the block. Caputi et al. (1997) applied recurrent GON and SON blockade in 27 patients with migraine-related headache who did not respond to medical treatment and stated that they achieved 85% success after one month of evaluation. Unlike Caputi et al. (1997) we evaluated the effect of terminating the acute attack in the acute period (fifth and 30th minutes). In our study, the rate of patients responding to blockade was 97.4%, and our mean VAS value in 30 minutes was 0.3979 ± 1.3013.

Our most important limitation is that the patients we enrolled in the study were not followed up in the pe-

riods after the thirtieth minute, and we did not compare and create a placebo group that was not injected with the drug.

CONCLUSION

Our findings show that bilateral GON and SON application is beneficial in the termination of acute migraine attack as it significantly reduces the VAS value, is easy and can be applied in a short time, and is inexpensive. However, controlled studies are needed to show its prophylactic effect against subsequent attacks of patients.

Ethics approval and consent to participate: This study was approved by the ethics committee of University of Health Sciences Van, Turkey (16.04.2015 dated, versiyon: 02)

Competing Interests. The authors declare no conflict of interest.

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