Proceeding S.Z.P.G.M.I. Vol: 31(2): pp. 75-79, 2017.

Preventive effect of Greater Occipital Nerve Block on Severity and Frequency of Migraine Headache

Dr. Syed Mehmood Ali, Dr. Mudassar Aslam, Dr. Dawood Ahmed Khan
Department of Anesthesiology, Shaikh Zayed Postgraduate Medical Complex, Lahore

ABSTRACT

Introduction: Greater occipital nerve (GON) block has long been used in headache treatment. The rationale for using GON block in headache treatment comes from evidence for convergence of sensory input to trigeminal nucleus caudalis neurons from both cervical and trigeminal fibers. **Objective:** This study compared the effectiveness of greater occipital nerve block with triamcinolone plus lidocaine or normal saline plus lidocaine on severity and frequency of migraine headache. **Methods:** A randomized controlled trial was done on 50 patients with migraine at Pain clinic, Jinnah Burn & Reconstructive Surgical Center, Lahore from July to December 2015. A syringe containing 1.0 mL of lidocaine 2%, 0.5 mL of either saline (control group, n=25) or triamcinolone 0.5 mL (intervention group, n=25) was prepared for each patient. Patients were assessed at baseline and then at 2, 4, 6 and 8 weeks for severity and frequency of pain, analgesic use and side effects. **Results:** No significant differences were revealed in pain severity, pain frequency, and analgesics use between the two groups at baseline, and 2, 4, 6 and 8 weeks after the intervention. However, in both groups, the indices of pain severity, pain frequency, and analgesics use were significantly reduced at the four time points after the intervention compared with before the intervention. **Conclusion:** GON Block with triamcinolone and lidocaine or normal saline and lidocaine results in reduced pain severity and frequency as well as use of analgesics up to two months after the intervention.

Key words: Occipital nerve block, Migraine, Lidocaine, Triamcinolone.

INTRODUCTION

Migraine is now identified as one of the most frequent disabling medical conditions experienced worldwide that more than 90% of the patients report an impaired function during migraine attacks, and half of them report severe disability requiring bed rest.[1-3] The associated disabilities of migraine headaches result in spending indirect high costs due to decreased productivity and lost working days each year.[4]

Various pharmacologic agents used as the treatment of migraine can be classified to abortive (for alleviating the acute phase) and prophylactic[5-6] acute treatment including selective serotonin receptor agonists, ergot alkaloids, analgesics, non-steroidal anti-inflammatory drugs, alone or in combination with an anti-emetic are used to reverse, or at least stop progression of headache that is most effective when given within 15 minutes of pain onset.

Preventive/prophylactic medications are administrated including antiepileptic drugs, beta blockers, tricyclic antidepressants, calcium channel blockers, selective serotonin reuptake inhibitors, serotonin antagonists, and even botulinum toxin. However, subsets of patients who neither achieve adequate pain relief nor can tolerate the side effects of typical migraine treatments emphasize requiring alternative medications.[7]

Peripheral nerve blocks have long been used in headache treatment. The most widely used procedure for this purpose has been greater occipital nerve

(GON) block.[8] The rationale for using GONB in headache treatment comes from evidence of convergence of sensory input to trigeminal nucleus caudalis neurons from both cervical and trigeminal fibers.[9]

The GON composed of sensory fibers that originate predominantly at the C2 level support the concept that the GON can be the irritable structure that generates occipital and fronto-orbital pain; pain which could be alleviated by anesthetic blocks and by neurolysis.[10]

Although there is no standardized procedure for GONB, the nerve is usually infiltrated by a local anesthetic or corticosteroid. Several studies suggested the efficacy of GON block in the treatment of migraine, cluster headache, and chronic daily headache. But, few of them were controlled and blinded. Despite a favorable clinical experience, little evidence exists for the efficacy of GON block in migraine treatment. Considering such a Premise, we wished to evaluate the therapeutic efficacy of GON block in patients affected by migraine headaches

MATERIALS AND METHODS

After the approval of ethical committee randomized control trial conducted at Pain clinic, Jinnah Burn & Reconstructive Surgical Center, Lahore from July to December 2015. A syringe containing 1.0 mL of lidocaine 2%, 0.5 mL of either saline (control group, N = 25) or triamcinolone (intervention group, N = 25) was prepared for each patient. Greater occipital nerve blocks were performed bilaterally.

Using a 25 gauge needle, 1.5 mL was injected to each greater occipital nerve at the medial third of the distance between the occipital protuberance and the mastoid process[8]. Patients were randomly assigned to either intervention or control groups and were blinded to the type of treatment they received.

Demographic data were collected. Both groups received 20 mg tablets of Propranolol two times daily for 8 weeks. Patients were assessed prior to the injection, 2 weeks, 4 weeks, 6 weeks and 8 weeks after the injection for severity and frequency of pain, times to use analgesics and any appeared side effects. Headache severity was assessed on 11 point scale. Analgesic use was measured as number of doses per week.

Inclusion criteria:

- Age of 18 to 75 years
- Migraine history (with or without tenderness),
- At least one attack a week or MIDAS score greater than 11. (adenexa1).

Exclusion criteria:

- Pregnancy or breast feeding
- Continuous headaches
- Opioid medications use
- Administration of prophylactic treatments for migraine within last two months
- Hypersensitivity to the drugs used in the study
- Local infection
- Chronic cluster headaches
- Chronic tension headaches

Statistical Analysis

Results were presented as mean ± standard deviation (SD) for quantitative variables and were summarized by frequency (percentage). Categorical variables were analyzed using chi-square test.

Changes in symptom severity and other measured variables were compared between the two groups using the Repeated Measure ANOVA test. For the statistical analysis, the statistical software SPSS v21.0 was used. P- values of 0.05 or less were considered statistically significant.

RESULTS

In this study 50 patients were included and divided into two groups with 25 patients in each. The two interventions and control groups were matched in terms of mean age 37.28 ± 10.15 and gender distribution (male 52% versus female 48%).

No significant differences were revealed in pain severity, pain frequency, and analgesics use at the five study time points including at baseline, and 2, 4, 6 and 8 weeks after the intervention between the two groups.

However, in both groups, the indices of pain severity, pain frequency, and analgesics use were significantly reduced two weeks after the intervention compared with before the intervention.

Comparing these variables between the fourth week after the intervention and previous time points

showed that all indices were significantly higher in the fourth week than the second week after the intervention, but the values of these three variables were significantly lower in the fourth week compared to baseline.

Similar findings observed in the eighth week of the study, i.e. comparing these variables showed that although the variables were higher in the eighth week than the second and fourth week of intervention, but the values of these variables were significantly lower in the eighth week compared to baseline.

However, the trends of the changes in these variables were similar in the two groups within eight weeks of the study. Within the study period, no serious side effect was observed in both groups of the study.

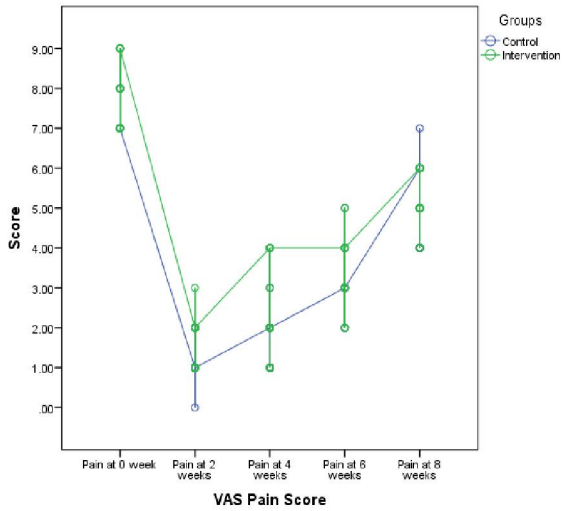

Figure 1: Trend of the changes in pain severity in intervention and control groups.

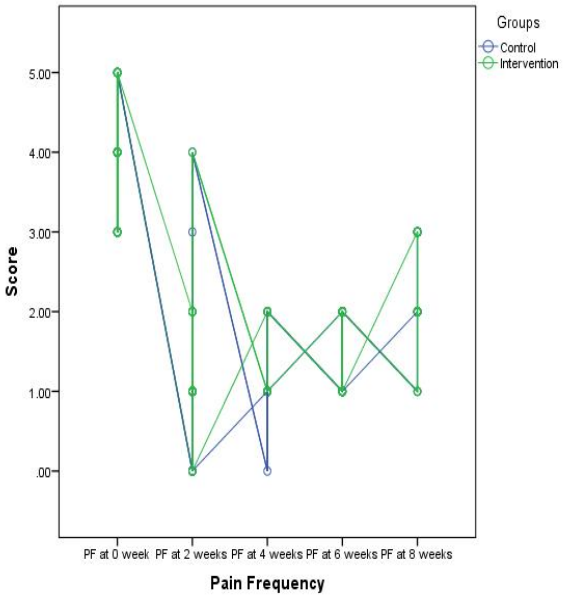

Figure 2: Trend of the changes in pain frequency in intervention and control groups.

DISCUSSION

In the present study, the effect of greater occipital nerve blocking on migraine headaches were assessed by evaluating pain severity, pain frequency, and times to use analgesics. In this context, the changes in study variables were compared between the two groups including the intervention group which received triamcinolone and lidocaine and the control group received normal saline with lidocaine within eight weeks of study.

Our study showed in both groups, a considerable decrease in three variables within two weeks from the injection time point in comparison to before the injection; however the trends of the changes in these variables were similar in both groups. On the other hand, our study showed that both drug regimens were similarly effective on reducing pain severity and frequency and on decrease of times to use an analgesic.

Similar results were found in another study by Ashkenazi and colleagues (Ashkenazi et al., 2008).[11] Saracco et al. (2010) showed that the anesthetic blockage with bupivacaine on the greater occipital nerve blocking does not change the number of crises and their duration, but it provokes an intensity reduction after 60 days from the infiltration.

Overall, it seems that the use of triamcinolone with lidocaine has no superiority on the use of lidocaine with normal saline for greater occipital nerve blocking, thus because of its probable side effects, administration of latter regimen is more recommended especially in repeated injections.
Greater Occiptital nerve blocking with triamcinolone or normal saline in combination with lidocaine will result in reducing pain severity and frequency as well as use of analgesics up to two months after the intervention

CONCLUSION

In conclusion, greater occipital nerve blocking with the two regimens including triamcinolone in combination with lidocaine or normal saline with lidocaine results in considerable reducing pain severity and frequency as well as use of analgesics up to two months after the intervention, although no significant differences attributed to the trend of changes of pain characteristics by one of the drug regimens.
According to our final findings, effects of the therapeutic interventions have been shown, but the superiority between one of the groups has not been indicated. Thus, in migraine status with MIDAS > 11 with no response or tolerance of common migraine treatments, Greater Occipital Nerve blocking with lidocaine with saline can be considered as a safe treatment approach.

REFERENCES

1. Goldstein J, Hoffman HD, Armellino JJ, Battikha JP, Hamelsky SW, Couch J, Blumenthal H, Lipton RB. Treatment of severe, disabling migraine attacks in an over-the-counter population of migraine sufferers: results from three randomized, placebo-controlled studies of the combination of acetaminophen, aspirin, and caffeine. Cephalalgia. 1999;19(7):684-91.
2. Kalra AA, Elliott D. Acute migraine: Current treatment and emerging therapies. Therapeutics and clinical risk management. 2007;3(3):449.
3. Kelley NE, Tepper DE. Rescue Therapy for Acute Migraine, Part 3: Opioids, NSAIDs, Steroids, and Post-Discharge Medications. Headache: The Journal of Head and Face Pain. 2012;52(3):467-82.
4. Loder E, Weizenbaum E, Frishberg B, Silberstein S. Choosing wisely in headache medicine: the American Headache Society's list of five things physicians and patients should question. Headache: The Journal of Head and Face Pain. 2013; 53 (10):1651-9.
5. Headache Classification Subcommittee of the International Headache Society. The international classification of headache disorders. cephalalgia. 2004;24 (1):1-60.
6. Koreshkina MI. New classification and standards in treatment of migraine. Zhurnal nevrologii i psikhiatrii imeni SS Korsakova/Ministerstvo zdravoo khraneniia imeditsinskoi promyshlennosti Rossiiskoi Federatsii, Vserossiiskoe obshchestvo nevrologov [i] Vserossiiskoe obshchestvo psikhiatrov. 2013;114(4):78-81.
7. Cutrer FM, Charles A. The neurogenic basis of migraine. Headache: The Journal of Head and Face Pain. 2008;48(9):1411-4.
8. Bovim G, Fredriksen TA, Stolt-Nielsen A, Sjaastad O. Neurolysis of the greater occipital nerve in cervicogenic headache. A follow up study. Headache: The Journal of Head and Face Pain. 1992;32(4):175-9.
9. Bakketeig LS. Tension-type headache. Comparison with migraine without aura and cervicogenic headache. The Vågå study of headache epidemiology. Functional neurology. 2008;23(2):71.
10. Young WB. Blocking the greater occipital nerve: utility in headache management. Current pain and headache reports. 2010;14(5):404-8.
11. Ashkenazi A, Levin M. Greater occipital nerve block for migraine and other headaches: is it useful? Current pain and headache reports. 2007;11 (3):231-5.

The Authors:

Dr. Syed Mehmood Ali
Assistant Professor Anesthesia
Sheikh Zayed Hospital, Lahore. Pakistan
Email; smass100@hotmail.com

Dr. Mudassar Aslam
Associate Professor of Anesthesia
Jinnah Hospital, Lahore. Pakistan
Email; m.mudassar.aslam@gmail.com

Dr. Dawood Ahmed Khan
Consultant Anesthetist
Jinnah Hospital, Lahore. Pakistan
Email; dr_daud@hotmail.com

Corresponding Author:

Dr. Syed Mehmood Ali
Assistant Professor Anesthesia
Sheikh Zayed Hospital, Lahore. Pakistan
Email; smass100@hotmail.com