Greater occipital nerve block for the treatment of chronic migraine headaches: A systematic review and meta-analysis.

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Background

Migraine headaches are extremely debilitating and affect over 10% of the US population. Treatment options for migraine have been historically limited to pharmaceutical agents or cognitive behavioral therapy. However, peripheral nerve block has also long been used, and recent advancements in the understanding of anatomical variations of the greater occipital nerve have strengthened its role in the treatment of chronic migraine headaches.

Methods

A systematic review of the literature was performed in the citation databases PubMed, Embase, Medline and The Cochrane Library. The initial search of databases yielded 259 citations of which 33 were selected as candidates for full-text review. Of these, 9 studies were selected for inclusion in this meta-analysis.

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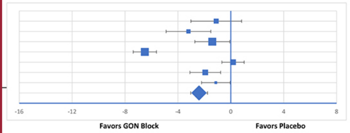
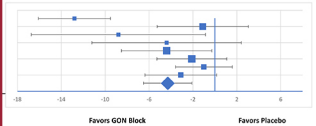
Results

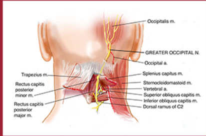
Studies were analyzed that reported mean headache days per month in both intervention and control groups. A total of 417 patients were studied, with a pooled mean difference of -3.6 headache days (95% CI = -1.39 to -5.81). This demonstrates that GON block intervention significantly reduced the frequency of migraine headaches compared to control ($p < 0.00001$). Pooled mean difference in pain scores of -2.2 (95% CI = -1.56 to -2.84) also demonstrated significant decrease in headache severity compared to control ($p < 0.0121$).



Forest plot demonstrates favorable reduction in mean VAS scores before and after treatment.



Forest plot demonstrates reduction in headache days per month.



Anatomical course of the greater occipital nerve.

References:

1. Ashkenazi, A., Matro, R., Shaw, J. W., Abbas, M. A., & Silberstein, S. D. (2008). Greater occipital nerve block using local anaesthetics alone or with triamcinolone for transformed migraine: a randomised comparative study. Journal of Neurology, Neurosurgery & Psychiatry, 79(4), 415-417.

2. Cuadrado, M. L., Aledo-Serrano, Á., Navarro, P., López-Ruiz, P., Fernández-de-las-Peñas, C., González-Suárez, I., ... & Fernández-Pérez, C. (2017). Short-term effects of greater occipital nerve blocks in chronic migraine: a double-blind, randomised, control-controlled clinical trial. Cephalalgia, 37(9), 864-872.

3. Gul, H. L., Ozon, A. O., Karadas, O., Koc, G., & Inan, L. E. (2017). The efficacy of greater occipital nerve blockade in chronic migraine: A control-controlled study. Acta Neurologica Scandinavica, 136(2), 138-144.

4. Inan, L. E., Inan, N., Karadaş, Ö., Gül, H. L., Erdemoğlu, A. K., Türkel, Y., & Akyol, A. (2015). Greater occipital nerve blockade for the treatment of chronic migraine: a randomized, multicenter, double-blind, and control-controlled study. Acta Neurologica Scandinavica, 132(4), 270-277.

5. Karadaş, Ö. M. E. R., Özön, A. Ö., Özçelik, F., & Özge, A. (2017). Greater occipital nerve block in the treatment of triptan-overuse headache: A randomized comparative study. Acta Neurologica Scandinavica, 135(4), 426-433.

Conclusion

GON block was found to significantly reduce the pain, intensity, and frequency of migraine headaches in patients that experience chronic migraines, with a negligible increase in adverse events. As such, GON block should be recommended for use in migraine patients, in particular those that may require future surgical intervention. GON block may act as an important stepping stone for patients experiencing migraine headache.