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Title

Impact of OMT for Migraines After Concussion

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Post-traumatic headaches (PTH) are one of the most commonly reported sequelae of mild traumatic brain injury (mTBI). Despite its prevalence, the overall pathophysiology and consensus on the best treatment approach is unclear. While several medications are available to treat migraines, patients with post-traumatic headaches of migraine phenotype respond poorly to standard migraine treatment. A multimodal, personalized, and collaborative treatment approach is often used for the burdensome sequelae of symptoms associated with post-traumatic migraine.

The field of osteopathic manipulative medicine (OMM) may have a unique role in post-traumatic headaches. This study's aim is to build on the existing data that supports OMT as a treatment model in migraine headache to include post-traumatic migraines specifically.

This proof-of-concept 30-week prospective study software-randomized 16 participants into two treatment arms: an immediate treatment group (standard of care plus 12 weeks of weekly 40 - 60 minute OMT sessions followed by 12 weeks of monitoring) versus a control group (6 weeks of standard of care alone, followed by 12 weeks of standard of care plus OMT, followed by 12 weeks of monitoring). Participants were evaluated with self-screening questionnaires at baseline, 6, 12, 18, and 24 weeks to assess for primary outcomes of self-reported headache frequency (using a headache diary) and secondary outcomes of migraine disability (MIDAS), intensity (10 point scale), depression (CSD-D), and general health-related quality of life index (SF-36).

This study found a significant, 51% decrease in the number of headache days immediately after the OMT intervention and 57% decrease from baseline at the 3-month follow-up (Baseline: 51.1 ± 36.3 25.1; post OMT: 25.1 ± 30.2 days; 3 month f/u: 21.9 ± 31.2 days; $F(2,26) = 8.864$, $p = 0.006$). There was a large effect size (Partial Eta Squared 0.399) and strong power (0.853) associated with this finding. There was also significant difference between baseline and 12 wks ($F(1,13) = 8.85$, $p = 0.011$) as well as baseline compared to 24 weeks ($F(1,13) = 9.96$, $p = 0.008$). There was also a significant decrease in headache intensity ($F(2,26) = 11.229$, $p = 0.002$). There was also a significant decrease in use of abortive medications ($F(2,24) = 6.041$, $p = 0.026$). There was also a significant decrease in all quality of life measures. The MIDAS score decreased ($F(2,26) = 8.441$, $p = 0.010$), CESD scores decreased over time ($F(2,26) = 9.747$, $p = 0.006$), and SF-36 ($F(2,26) = 13.969$, $p = 0.001$). Findings were significantly different between baseline and post-OMT as well as baseline and at 3-month follow-up.

The significant reduction of migraine type headaches in participants in this study, the improvement in headache intensity, reduction in medication use, and improvement in MIDAS score suggest that biomechanical forces play an important and under-recognized role in the mechanism of headache after mTBI. These results also suggest that there is a potentially significant role of OMT in treating post-traumatic headache. It is a safe, well-tolerated, and can be effective. Considerations for future study may include a larger randomized control trial including a sham treatment.