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Headaches and Migraines:
Osteopathic Manipulative Treatment is the Answer

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Abstract

Migraine is a common disorder with a prevalence of 6% in men and 18% in women. A migraine in the majority of cases is a hindering headache that is preceded or accompanied by a sensory warning sign such as flashes of light, blind spots or tingling in your arm or leg. As a result, pain can be excruciating for hours or even days. Although there are many different classifications of headache, this paper will be focusing on primary headache and migraine (Cerritelli et al., 2013). Briefly, migraines are caused by an activation of cells in the trigeminal nucleus, resulting in the release of vasoactive neuropeptides, involving serotonin and dopamine. For a headache to be diagnosed as a migraine, two of the following features must be present: unilateral pain, throbbing pain, aggravation by movement, moderate or severe intensity, nausea/vomiting, photophobia and phonophobia. Furthermore, migraines are treated today via non-pharmacologic methods such as lifestyle and stress management, and pharmacologically with analgesics (i.e., NSAIDs), serotonin agonists (i.e., ergotamine and sumatriptan) and dopamine antagonists (i.e., metoclopramide). Consequently, osteopathic manipulative treatment is a gentle, non-invasive complementary therapy that allows the body to function correctly. Using manual techniques to highlight areas of tension and blockages, a manual osteopath relieves constriction so the body uses its own natural ability to overcome illness. Essentially, osteopathic manipulative treatment relieves tension and poor posture, alleviates prolonged muscle tightness in the neck leading to nerve compression, and enhances oxygen delivery to the brain (Tepper et al., 2004).

Introduction

Migraines are among the oldest diseases known to mankind. Headache accounts for 4.4% of all consultations in general practice, 5% of all medical admissions to hospital, and approximately 20% of neurology outpatient consultations (Tepper et al., 2004). This common disabling brain disorder affects over 20% of people at some point in their lives. Furthermore, epidemiological studies have shown that 4.5% of the population of Western Europe has headache on at least 15 days per month (Welch et al., 2002).

The word migraine was derived from the Latin word “hemicrania” meaning “half” (hemi) “skull” (crania). Some of the earliest cases of painful headaches were recorded by the ancient Egyptians and date back as far as 1200 B.C. Around 400 B.C., Hippocrates referred to the visual disturbances that can precede a migraine such as flashing lights or blurred vision (Mandal, 2014). Later on, Aretaeus of Cappadocia was given credit for migraine discovery. The term “migraine” was first used by Galenus of Pergamon to describe the pain felt across one side of the head during migraine. In addition, he suggested that the pain originated in the meninges and vasculature of the head. Essentially, he pointed out a connection between the stomach and the brain due to the vomiting that seemed to be related to migraines (Mandal, 2014). In the late 1930s, Graham and Wolff reported that ergotamine tart could relieve migraines. The tart was actually found to provide relief by causing vasoconstriction of dilated vessels in the brain. In 1950, Harold Wolff designed an experimental approach to exploring the brain and proposed that blood vessel abnormalities were associated with migraine (Mandal, 2014).

Although the tendency to migraine is genetic and cannot be cured in any sense, many pain management treatments are available today (Weatherall, 2015). Migraine may

be triggered by internal or external influences, or simply come by themselves for no apparent reason. Below is a table depicting the symptoms experienced by migraine sufferers as reflected in the ICHD criteria for diagnosis (Figure 1) (Weatherall, 2015).

Figure 1: International Classification of Headache Disorders diagnostic criteria for migraine.

(1) At least five attacks fulfilling criteria (2)-(4)
(2) Headache attacks lasting 4-72h (untreated or successfully treated)
(3) Headache has at least two of the following <u>four</u> characteristics: (a) Unilateral location (b) Pulsating quality (c) Moderate or severe pain intensity (d) Aggravation by or causing avoidance of routine physical activity (e.g. walking or climbing stairs)
(4) During headache, at least <u>one</u> of the following: (a) Nausea and/or vomiting (b) Photophobia and phonophobia
(5) Not better accounted for by another ICHD-3 diagnosis

There are three broad approaches to treating chronic migraine today: lifestyle and trigger management, acute treatment, and preventative treatment. The regularity of regimen with regard to meals, hydration, sleep and stress is always helpful in reducing the tendency to migraines (Ferrari et al., 2002). In migraine sufferers, if simple analgesics are not effective, then triptans should be used and opiates should be avoided if possible (Stovner et al., 2014). Some potential acute treatments include: Aspirin (900-1200mg), Ibuprofen (400-800mg), Naproxen (250-500mg), Almotriptan (12.5mg), Naratriptan (2.5-5mg), Zolmitriptan (5-10mg) and more. Finally, as for preventative headache treatments for chronic migraine, first-line drugs such as beta-blockers, angiotensin blockers and tricyclics can be taken daily in specific dose regimes (Ferrari et al., 2002).

If these first- or second-line preventatives fail, the patient should be referred to a specialist headache clinic for reevaluation and consider treatments like occipital nerve blocks, botox injections in several areas of the head and neck, or occipital nerve or deep brain stimulation (Afridi et al., 2006).

The purpose of this research paper is to shed light on manual osteopathic treatment and its effect on migraine headaches. Osteopaths are expertly trained to feel tension in all body tissues and correct postural strains that can produce this change with the use of gentle manipulation techniques (“Move Osteopathy: Migraine”). An osteopath can give patients some instruction on how to manage migraine and can use gentle treatment on spasmed muscles due to pain and help reduce stress. In addition, they can prescribe specific exercises and stretches whilst educating patients on good posture and ergonomics in daily life (“Move Osteopathy: Migraine”). Essentially, osteopathic manipulative treatment has a positive effect on migraines as it relieves tension and poor posture, alleviates prolonged muscle tightness in the neck leading to nerve compression, and enhances oxygen delivery to the brain.

Osteopathic Manipulative Treatment

Osteopathic Manipulative Treatment alleviates tension in the neck and corrects poor posture. Head, neck and shoulder pain is incredibly common in today's society and is often caused by poor sitting posture. In turn, this will allow the spine to become still and immobile, causing the musculature in the vicinity to become exhausted from trying to maintain the head in a less optimal position ("Could Poor Posture be Causing Those Migraine Attacks?"). Essentially, sitting with a forward-head posture will cause the important neck-stabilizing muscles to lengthen and weaken and other muscles to tighten in the back of the head. This tightness will cause a headache and interfere with the vascular blood flow to the head whilst causing inflammation of the facet joints in the upper and middle part of the neck, triggering a migraine ("Could Poor Posture be Causing Those Migraine Attacks?").

According to the Drayer Physical Therapy Institute, manual techniques including soft tissue and cervical mobilization can improve cervical motion and reduce muscle tension. Strengthening and stability training for the head and neck muscles can aid with neck alignment and posture improvement. In addition, breathing techniques can be prescribed to increase blood flow to the head, reducing tension in the neck muscle and reducing stress in the area. Finally, an ergonomic assessment for both work and leisure activities can be completed to lessen neck tension ("Is Your Neck Causing Your Migraine?" 2015).

Essentially, a manual osteopath is able to complete all of the above-mentioned tasks in order to help patients manage their lifestyle to prevent and treat migraine symptoms.

Osteopathic Manipulative Treatment relieves prolonged muscle tightness in the neck leading to nerve compression. To begin, a pinched or compressed nerve can produce symptoms ranging from muscle weakness and mild tingling to severe, insistent pain. Symptoms suggestive of pinched or compressed nerve include neck pain and stiffness with a combination of radiating pain, tingling, numbness and weakness down the arm, forearm and fingers ("Pinched Nerve Pain"). Although the most common sites for upper body pinched nerves are neck, shoulder, elbow and wrist – since there are many injuries and disorders that can cause a nerve compression, the osteopath's first task is to determine the exact cause. Once a diagnosis is made, osteopathic treatment for a compressed nerve, often leading to migraines, involves soft tissue massage therapy, stretching of tight muscles and joints, strengthening and/or stretching exercises and mobilization and/or manipulation of the problem area ("Pinched Nerve Pain").

Studies

According to a study performed by US-trained osteopathic physicians, osteopathic manipulative treatment is a cost-effective approach to treating patients with migraine. In March of 2011, researchers in Germany used a randomized clinical trial design to assess the effectiveness of osteopathic manipulative therapy by a European osteopath plus standard care (i.e., medication) versus standard care only for women with histories of migraine, as defined by the International Classification of Disease (Voigt et al., 2011).

Furthermore, the clinical researchers recruited 65 patients, of whom 42 were women aged between 22 and 65 years old. The 42 participants were randomly assigned to the 2 study groups, with each group having 21 participants. All participants continued using their previously prescribed medications (Voigt et al., 2011). A physiotherapist licensed to practice osteopathy provided osteopathic manipulation to each of the participants in the intervention group in 5 sessions lasting 50 minutes each over a 10-week period. Meanwhile, the control group did not receive any type of manipulative treatment. Participants were asked to fill out 3 standardized questionnaires before the study and at 6-months follow up to assess pain intensity, the impact of migraine on daily life and health-related quality of life, and the number of days with migraine headache. The results showed statistically significant improvement in the intervention group (Voigt et al., 2011). Essentially, pain intensity and the disturbance in occupation and number of disablement days caused by migraine showed statistically substantial reductions. Consequently, the control group had statistically significant decreases only in emotional role functioning. In essence, this study supports the effectiveness of osteopathic manipulative therapy combined with standard medication for women with migraine headache in regard to decreased pain intensity, reduced number of days with migraine, reduced working disability, and improvement in some areas of health-related quality of life (Voigt et al., 2011).

In a study of 50 patients with migraine, 64% reported neck pain or stiffness associated with their migraine attack (Blau et al., 1999). In another study of 144 migraine patients from a university-based headache clinic, 75% of patients reported neck pain associated with migraine attacks. Of these patients, 69% described their pain as “tightness”, 17% reported “stiffness” and 5% reported, “throbbing”. Differences in neck posture, pronounced levels of muscle tenderness, and the presence of myofascial trigger points were observed in subjects with migraine and it was stated that migraine has a great degree of musculoskeletal involvement (Blau et al., 1999).

In a similar controlled trial study testing the effectiveness of therapeutic exercise and manipulative treatment for cases of cervicogenic migraines, researchers found that all patients with migraines can benefit from manual modes of therapy and physical conditioning (Jull et al., 2005).

According to results, osteopathic manipulative techniques such as craniosacral, strain counter strain, and muscle energy techniques are appropriate for the management of cervicogenic migraine. Essentially, high velocity, low amplitude manipulation can be carefully used in some patients (Biondi et al., 2005).

According to a study carried out in the Department of Neurology of Ancona’s United Hospitals, osteopathic manipulative therapy can be considered a valid procedure for the management of patients with migraine. All patients admitted in the unit with a diagnosis of migraine were considered eligible for the study according to the International Headache Society criteria. Fundamentally, 105 patients entered in the study and were randomly divided into 3 groups: Osteopathic manipulative therapy, drugs (triptans) only and sham therapy (Cerritelli et al., 2013). All patients were followed up for 6 months.

Questionnaires were used to evaluate both the severity of migraine and the quality of life. At the end of the follow-up, ANOVA showed a statistically significant difference. The sham group was not statistically different from the drug group; meanwhile, the osteopathic manipulative therapy group was statistically different from the drug group and from the sham group (Cerritelli et al., 2013).

Conclusion

According to the many studies examined in this paper along with general knowledge and research in the field of osteopathy, osteopathic manual treatment is an effective source of pain management and prevention for headaches and migraines. Whether patients depend on this treatment solely or pair it with pharmacological treatment, it has been shown to alleviate tension and poor posture, relieve muscle tightness in the neck leading to nerve compression, and enhance oxygen delivery to the brain. Essentially, osteopathy is used to treat the patient in a holistic manner, that is, globally. This takes into account the symptoms evoked by each individual and adds to this the results of a manual examination to propose an optimal therapy that is customized to the patient. The goal of the treatment is avoid recurrence or to increase the period of time between events. Essentially, during an osteopathic treatment session, many treatment methods can be used to treat migraine headaches. For example, soft tissue manipulation is used to evaluate the condition of tissues, ease restrictions as well as help the body's fluids flow smoothly. Next, cranial osteopathy is often used to assess and treat the mobility of the skull and its contents. Visceral manipulation improves the mobility and overall function of the organ. Osteopathic articular techniques essentially act as less forceful practices to reduce muscle spasms and reduce pain and discomfort. As for future studies, more research should be done on botox injections in the head and neck area. Seeing that these injections are becoming more and more relevant and readily available in today's society for cosmetic purposes, the population should be more educated on how it can aid in migraine treatment and prevention as well.

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