Integrative East–West Medicine Intervention for Chronic Daily Headache: A Case Report and Care Perspective

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Abstract
Chronic daily headache is a group of headache syndromes including most commonly chronic migraine and chronic tension-type headache, which often overlap, are complicated by medication overuse and are disabling, costly, and variable responsive to western pharmacotherapeutic interventions. There is growing research and awareness of integrative health approaches and therapies to address patients with chronic headache, yet limited examples of how to deliver this approach. This article reviews a commonly seen challenging case of a patient with overlapping chronic migraine and chronic tension-type headache complicated by medication overuse managed with an integrative east–west medicine intervention. This included person-centered biopsychosocial history taking, traditional Chinese medicine informed acupuncture, trigger point injections, and contributing factors modifications. A narrative review of the literature is presented to demonstrate an evidence-informed rationale for incorporating nonpharmacologic approaches to effectively help reduce the symptom burden of this patient population.

Keywords
chronic daily headache, integrative medicine, migraine, acupuncture, trigger point

Introduction
Chronic daily headache (CDH) is a group of headache syndromes characterized by headache symptoms ≥15 days per month over at least 3 months.1 The prevalence of CDH is estimated to be ~4% of the US adult population.2 The 2 most common subtypes are chronic migraine (CM) and chronic tension-type headache (CTTH), estimated to be ~58% and 40% of CDH patients, respectively.3 CDH contributes significantly to patients’ overall disability, impaired quality of life, and higher health-care resource utilization compared to less frequent headache syndromes.4 CM is particularly insidious; the WHO ranked CM among the top 5 conditions contributing to disability worldwide.5 Determining treatment plans for CDH patients is complicated due to the considerable overlap between CM and CTTH in regards to symptoms and their medication overuse patterns. In patient surveys, 58% of migraine patients reported migraine-type symptoms.6 CDH patients also commonly overuse acute headache medications. At least two-thirds of CDH patients report that they have used abortive medications ≥14 days per month and meet criteria for a dual diagnosis of medication overuse headache (MOH).7,8 Despite a variety of oral pharmacologic therapies used for the prophylaxis of CDH, many patients continue to suffer with unacceptable symptom burden and disability.1,9

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There is an inherent tension between the dominant conventional biomedical model that emphasizes a specific reductionist diagnosis and pharmacologic therapies and patients with chronic headaches that do not fall neatly into this paradigm. Many patients with CDH are dissatisfied with a purely pharmacotherapy-based approach and seek complementary and alternative medicine (CAM) therapies to combine with their care. One large online survey of chronic migraineurs found that only 30% were satisfied or very satisfied with their medical treatment for their migraines, and 75% reported that they incorporated nonpharmacological therapies “most of the time” or “always” into their migraine care. The rates of CAM use by headache sufferers are reported to be as high as 50% in primary care and ~80% in tertiary care headache clinics and suggest the desire for more holistic treatment options. We present a patient case with refractory CDHs, specifically, intermittent migraines without aura, daily tension-type headaches, and medication overuse. The patient’s symptoms were successfully managed through a person-centered, integrative east–west medicine approach which incorporates an integrative medical health history and assessment both from traditional Chinese medicine (TCM) and western biomedical model. The individualized treatment methods included acupuncture, trigger point injections (TPIs), lifestyle modifications, and self-care prescriptions to modify risk factors for perpetuating headache symptoms. This case demonstrates the potential value of a multimodality, integrative medicine, CAM, and patient empowering approach to help complex CDH patients.

Case Presentation

Presenting Concerns

A 61-year-old male business executive with a medical history of anxiety and obstructive sleep apnea (OSA) presented to our integrative medicine consultative clinic with a chief complaint of CDHs. He recalls having headaches since childhood, and both his mother and sister had CMs. He described his headaches as a “tension” sensation radiating from his shoulders and base of the skull to his eyes bilaterally that was worse in the afternoon and upon awakening. His symptoms improved with massage therapy and avoidance of work-related stress. A minimum of 3 times per week, his headaches worsened and were accompanied by migrainous symptoms of unilateral blurry vision, nausea, vomiting, photophobia, and scalp/shoulder touch sensitivity that would last for 3 to 12 hours. His migraines were precipitated by alcohol intake and changes in the temperature. He denied any persistent visual changes, hearing loss, numbness, or weakness.

He was previously evaluated by a neurologist and a brain magnetic resonance imaging was unremarkable. He tried daily propranolol and amitriptyline for 3 months each, but did not notice a change in his symptom burden and was intolerant of the central nervous system side effects. He had been managed primarily by his primary care physician (PCP) for >10 years through prescriptions of oxycodone-acetaminophen and sumatriptan (average 12 and 9 tablets each month, respectively) which he used together to treat each migraine headache. He also used an acetaminophen–aspirin–caffeine (Excedrin) combination pill to address his tension-type headache symptoms an average of 12 tablets per month.

Clinical Findings and Integrative Diagnosis

A biopsychosocial history was obtained, and he reported frequent and chronic stress from his work and often felt pervasive anxious thoughts. He slept poorly and sparsely used his continuous positive airway pressure (CPAP) because of mask fitting issues. He had significant daytime sleepiness and attempted to manage this through prescription stimulants (modafinil, prescribed by his PCP) and consumed 4 to 5 cups of coffee per day. He spent the majority of his day at his desk and typing on his computer. He felt easily irritable and had a propensity to have outbursts of anger. He ate large amounts of red meat with limited fruit and vegetable intake. He had the habit of eating in a hurry at his work desk or during lunch meetings.

On examination, he was obese, with a body mass index of 30 kg/m². He exhibited a head forward posture, limited neck range of motion, and exquisite sensitivity to the upper trapezius muscles and base of occiput with palpation, which radiated to his temples and orbit. His neurologic examination was unremarkable. According to TCM examination, his tongue was slightly red around the edges, without coating and the pulse bilaterally wiry.

His east–west integrative assessment and diagnosis includes CDH that is an overlap of CM and CTTH with MOH, and TCM pattern diagnosis of liver yang rising with liver yin deficiency. Contributing factors likely include cervical predominant myofascial pain, unmanaged OSA, chronic over work, and psychological stress (Table 1).

Therapeutic Focus and Assessment

A treatment plan was created with a goal to reduce his headache symptom burden and overall disability (Table 1). He was seen every 2 weeks for a total of 5 visits. Each visit included an acupuncture treatment session that lasted for 25 minutes of needle time. This was preceded by at most 15 minutes of a medical visit to review his progress and care plan, and TPIs with 25-gauge × 1/2 in. needle with 0.2 mL...
of 1% lidocaine to each active trigger point noted on the initial examination. This was performed with the patient in a seated position and into his bilateral trapezius, rhomboid, and suboccipital musculature (total of 6 injections per session—Figure 1). Both procedures were performed by a licensed integrative medicine physician trained in internal medicine and certified to provide acupuncture through a physician fellowship (>200 h of acupuncture clinical training). Acupuncture points for each session included Yintang, Du-20, and bilateral placement at Lv-3, LI-4, LI-10, ST-36, GB-34, SP-6, KI-3, and SJ-3. Acupuncture was performed using 34-gauge needle, without attention to the De Qi sensation to a depth of 0.2 to 1 cm, retained without further manual or electrical stimulation (Figure 1). Point selection was based on TCM pattern diagnosis and common points utilized for headache from the medical literature and our clinical experience.13

Self-care plan. The patient was given a homework prescription of alternating between applying self-acupressure and an over-the-counter transcutaneous electrical nerve stimulator (TENS) to acupoints LI-4, SJ-3, GB-20, and GB-21 (Figure 2) for 15 to 20 minutes twice daily to help address head and neck pain (Table 1). He was advised to follow a generic neck and shoulder stretch routine handout for 10 to 15 minutes twice daily (build from the website hep2go.com). Given his anxiety and high subjective stress, we utilized a motivational interviewing approach to explore potential mind–body interventions to improve his stress mastery, and he decided on a goal to regularly walk outdoors while listening to the free guided mindfulness mp3 file from our affiliated UCLA Mindful Awareness Research Center (see https://www.uclahealth.org/marc/mindful-meditations). He was advised to reduce alcohol and caffeine use, increase his intake of vegetables with a goal of weight loss, to take frequent stretch breaks from his computer at work, and eat lunch mindfully. A referral was placed to follow-up with his sleep team to discuss his CPAP mask fitting issues.

### Follow-up and Outcomes

**Short term.** Over the following 2 weeks after his initial visit and treatment, he had no migraine headaches and did not require any medications for headache (Table 2). He had a stable reduction of his tension-type headache frequency and severity at each subsequent visit. By his third visit, his tension-type headache frequency had reduced to twice per week and migraine headache occurred once every 2 weeks. He reported the overall headache severity was characterized as “mild.” After the initial follow-up, he reported using oxycodone a maximum of 1/2 tablet per week and was not using any other abortive medications. He reported feeling an overall improvement in his quality of life and feeling of more control of his headache symptoms. During his treatment, he reported being adherent to the dietary recommendations, acupressure/self-massage, TENS unit use, stretching, and beach walking meditation activities more than 5 days per week.

No adverse effects were noted during or after his needle-based treatments or self-care homework.

**Long term.** At 3 months after his last treatment visit, he continued to have a more manageable headache symptom burden with mild tension-type headaches 2 days per week (Table 2). These headaches would progress to a migraine headache a maximum of once every 2 weeks. He continued to walk outside regularly and meditate daily. He had seen his pulmonologist and was treated for allergic rhinitis to improve his CPAP tolerance and was using the machine nightly. Patient reported being

### Table 1. Therapeutic Plan.

<table>
<thead>
<tr>
<th>Diagnosis and Factors</th>
<th>Treatments and Medical Care</th>
<th>Self-Care/Lifestyle Homework</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Chronic daily headache</td>
<td>• Acupuncture</td>
<td>• Neck stretching routine</td>
</tr>
<tr>
<td>• Chronic migraine</td>
<td>• Trigger point injections</td>
<td>• Self—acupressure/massage</td>
</tr>
<tr>
<td>• Chronic tension-type headache</td>
<td>• Referral for sleep specialist for CPAP mask re-fitting</td>
<td>• Transcutaneous electrical nerve stimulator</td>
</tr>
<tr>
<td>• Medication overuse headache</td>
<td>• Recommendation to reduce opiate and Excedrin use</td>
<td>• Mindfulness guided MP3s</td>
</tr>
<tr>
<td>• TCM diagnosis—liver yang rising with liver yin deficiency</td>
<td></td>
<td>• Diet modification with increased fruits and vegetables intake and reduction of red meat and coffee</td>
</tr>
</tbody>
</table>

Contributing factors:

- Chronic stress
- Sedentary lifestyle
- Obesity
- OSA unmanaged
- Low intake of fruits and vegetables
- Stimulant overuse

Abbreviations: CPAP, continuous positive airway pressure; OSA, obstructive sleep apnea; TCM, traditional Chinese medicine.
able to function in a higher level at work with a relatively small amount of analgesics along with stretching, TENS use, and walking meditation.

Case Discussion and Care Perspective

This case study shows the potential benefits of using a person-centered, integrative east–west medicine approach to reduce the symptom burden, and debility for patients with CDH. The patient presented with a lifelong burden of daily intractable headaches. He met the International Classification of Headache Disorders (ICHD) criteria for the diagnosis of CM without aura and MOH, yet as is commonly found, the diagnosis did not tell the full story. He also had multiple modifiable perpetuating behavioral risk factors and active myofascial trigger points.

From our clinical experience, these are commonly missed or overlooked features on history and physical examinations by neurologists and PCPs. Recognition of these risk factors could be used to create customized treatment plans to help patients modify behavioral factors that may be contributing to their headache syndrome chronicity and perpetuation. This patient was found to have unmanaged OSA with severe daytime sleepiness and morning headaches. Unfortunately, this was primarily addressed at a symptom level with prescription stimulants and patient administered high doses of caffeine. Patients with CDH are more likely to be habitual snorers and have more morning headaches compared to episodic headache sufferers. High

Figure 1. Acupoint and TPI Locations. TPI locations: a, sub-occipital; b, trapezius; c, rhomboid. Acupoint locations: 1, Du-20; 2, Yintang; 3, LI-10; 4, LI-4; 5, SJ-3; 6, GB-34; 7, ST-36; 8, SP-6; 9, LV-3.
Caffeine use is also associated with an increased risk of developing CDH compared to episodic headache controls.\textsuperscript{16} The patient is also obese, which is a modifiable risk factor for progression of migraine, and is also associated with an increased frequency and intensity of migraine symptoms.\textsuperscript{17} A review from 2008 emphasized the link between obesity and CDH and encouraged weight loss intervention for overweight patients with chronic headaches including behavioral nutritional education, dietary intervention, and exercise counseling.\textsuperscript{18}

From a TCM viewpoint, the patient fits into the pattern diagnosis of liver yang rising which is an imbalance of liver yin (deficient) and liver yang (in excess) leading to a relative rise of liver yang. Simplified, this would be a relative excess of heat in the body. It is the most common pattern diagnosis for chronic headaches\textsuperscript{13,19} and according to TCM theory has a root cause in emotional distress over long periods of time, specially anger, frustration, and resentment.\textsuperscript{20} Eating meals while working and in a hurry can also contribute as causing this pattern, as well as poor sleep, and stimulant medications. The principle of TCM treatment is to nourish yin and quieten liver yang. In this case, the stress management tools and eating habits modification in a TCM

\textbf{Figure 2.} Acupressure Self-Care Handout.
perspective were treating the root cause of his liver yang rising, together with the acupuncture treatments.

Our patient struggled with significant psychological stress, anger, and poor coping which were triggers for his headache symptoms. He implemented a regular meditation program that he felt was supportive of his treatments in clinic. Mind–body approaches for CM and CTTH have been increasingly studied and supported, specifically cognitive behavioral therapy, stress management training, and biofeedback.21,22 The efficacy of these approaches may be because many CDH patients also suffer from psychiatric comorbid diagnoses including anxiety, depression, and posttraumatic stress disorder, and mind–body interventions commonly focus on reducing the effects of stress and reduce central nervous system reactivity.23

Many of our patients with chronic stress and headaches are found to have a head forward posture and exhibit multiple palpable myofascial trigger points. We utilized TPIs with this patient because they are a safe and effective adjunctive treatment for tension-type and migraine headache to address the myofascial pain syndrome content.24 Active myofascial trigger points and cutaneous nociceptive units contribute to the symptom burden of both CM and CTTH. Two contributing factors are forward head posture and reduced neck mobility, which put excessive strain on the neck musculature and are strongly associated with CM and CTTH.25,26 Multiple studies have demonstrated a benefit with treatment of trigger points using lidocaine and other similar anesthetizing injections to the active myofascial trigger points for both CM and CTTH patients.27–29

For our patient, we combined TPIs along with acupuncture at each visit. Acupuncture is the most evidence supported CAM therapy for chronic headache. A Cochrane meta-analysis in 2009 investigating the use of acupuncture for migraine prophylaxis concluded acupuncture “is at least as effective as, or possibly more effective, than prophylactic drug treatment, and has fewer adverse effects.”30 In the same issue, a companion review concluded acupuncture could be a valuable option to treat frequent episodic or chronic TTH.31 Acupuncture is one cost-effective, low-risk intervention that shows many potential benefits to CDH patients and is underutilized by many allopathic practitioners and patients.10,32

Aside from passively received needle treatments, there is evidence for noninvasive therapies to address dysfunctional posture and myofascial contributions to headache and can be performed independently by patients. A 2017 review from Neurology encouraged utilizing a multidisciplinary team approach to manage CDH including occupational and physical therapists teaching patients self-management tools such as focusing on postural awareness, stretching, supportive exercises, and body mechanics.33 In addition, a Cochrane review found some evidence of benefit from randomized controlled trials investigating the use of TENS for CM, and a combination of TENS, self-massage, and stretching for CTTH. Although the evidence was “weak,” there was little risk of serious adverse effects.34 Our clinical experience with CDH patients is they are often receptive to receiving self-care homework.

Prior to our first visit, the patient’s care included a purely pharmacologic approach that included primarily abortive medications. This likely contributed to our patient developing CDH. An estimated 3% to 14% of episodic migraine patients that frequently use acute headache medication will transform to CM.1 The risk is highest with regular use of opioid (odds ratio [OR], 1.4) and butalbital combination (OR, 1.73) medications compared to triptans (OR, 1.07), and nonsteroidal anti-inflammatory drugs (OR, 0.97).9 Opiate class medications have previously been overly prescribed for

| Table 2. Summary of the Patient’s Treatment Course and Improvements Noted Over Time. |
|-----------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Initial Consult 2 Weeks 4 Weeks 6 Weeks 8 Weeks 5 Months | | | | | |
| Acupuncture | X | X | X | X | X | NA |
| TPI | X | X | X | X | X | NA |
| Assessment of self-care/lifestyle changes | X | X | X | X | X | X |
| Oxycodone use | 3×/week | 0 | ½ tablet every other week | ½ tablet every other week | ½ tablet every other week | ½ tablet every other week |
| Sumatriptan use | 2×/week | 0 | 0 | 0 | 0 | 0 |
| Acetaminophen–aspirin–caffeine use | 3×/week | 0 | 0 | 0 | 0 | 0 |
| Migraine HA episodes | 3×/week | 0 | 1× every other week | 1× every other week | 1× every other week | 1× every other week |
| Tension HA episodes | Daily | 2×/week | 2×/week | 2×/week | 2×/week | 2×/week |

Abbreviations: HA, headache; TPI, trigger point injection.
recurrent headache, and newer recommendations from the Centers for Disease Control, the neurology community and the American Board of Internal Medicine strongly argue that for most patients, the risks of opiates outweigh the benefits for treating acute and chronic headache syndromes.\textsuperscript{35,36} Botox or the newest pharmacological approach for chronic headaches could have also been considered in this patient. Erenumab is the first drug of this new class called calcitonin gene-related peptide inhibitors approved by the U.S. Food and Drug Administration as a preventive treatment option for patients with episodic or CM.\textsuperscript{37} The limiting aspects are the high cost, need for chronic use, and the unknown long-term effects, since it has only been tested in short trials of 12 to 24 weeks.\textsuperscript{38}

It is unclear as to which part or parts of the intervention account for his rapid improvement. This could include, for example, effects from the physical treatments, placebo, nonspecific therapeutic effects (therapeutic setting, provider–patient relationship), homework activities, and lifestyle modifications. In our clinical opinion, this is a tolerable limitation in order to create effective personalized therapies for an often-incurable complex chronic medical syndrome.

Final Thoughts

It takes patience, inquisitiveness, and sufficient clinical visit time to conduct a thorough history that includes both medical investigation and exploration into the multiple potential contributing factors to CDH patients’ debility.

Given the complex medical, personal, and lifestyle issues at play in many CDH patients who have suffered long-term limiting symptoms, we advocate for exploring more integrative approaches. This favors CAM and non-pharmacologic options to be used concurrently with the lowest risk, low cost, and most evidence supported mainstream pharmacologic treatments and therapies.\textsuperscript{39} Eastern philosophies, specifically TCM, are holistically oriented and have similar goals to support a patient’s inherent healing capacities.\textsuperscript{12} In addition to the proven needle effects, repeated acupuncture procedure visits provide the opportunity to build a therapeutic relationship, support lifestyle changes, and encourage self-care practices.\textsuperscript{13} TPIs are a low risk and effective needle-based intervention that could easily be used along with an integrative approach in a primary care setting.

We advocate for further research into the clinical application of integrative, comprehensive, multidisciplinary approaches in the routine, and compassionate care of CDH patients.

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