CASE STUDY

Tapering chronic opioid therapy in neuropathic facial pain: An interdisciplinary approach

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ABSTRACT

This case report presents a patient with chronic orofacial pain who was considered to be an appropriate candidate for chronic opioid therapy, a treatment uncommonly considered at most facial pain centers. Her opioid treatment proved ineffectual, and conservative approaches were addressed. She was successfully tapered off the use of a long-acting opioid within a relatively short time, using an interdisciplinary approach involving an aggressive biobehavioral approach.

Key words: neuropathic face pain, opioid therapy, behavioral therapy, psychological treatment, opioid taper, appliance therapy

INTRODUCTION

Chronic orofacial pain is a significant clinical problem with epidemiological studies typically showing prevalence of common persistent pain conditions such as back pain and headache.[1] Disability, work loss, and psychosocial concomitants are similar to those seen in other pain conditions.[1] These patients are often treated in dental settings with conservative approaches, whereas pharmacological management strategies are being used increasingly. Interventional and surgical approaches have also been attempted, generally with poor results. While multidisciplinary and behavioral treatments have shown increasing empirical support, these approaches are often the last to be considered. When a neuropathic origin is suspected, pharmacotherapy often involves first generation tricyclic antidepressants or adjuvants.[2] Serotonergic drugs or anticonvulsants may be useful in such patients whereas opioids are used for refractory cases.[2] As with other persistent pain conditions, chronic opioid therapy has been used as a treatment, sometimes as a last resort.[2]

Chronic orofacial pain can include many conditions such as musculoskeletal disorders, temporomandibular disorders due to joint dysfunction, or neuropathic disorders. As with other chronic pain conditions, a combination of etiologies may be present. Neuropathic pain is defined as "pain initiated or caused by a primary lesion or dysfunction in the nervous system."[3] It is characterized by a tactile allodynia or a painful response to a normally non-noxious stimulus.

Similar to other chronic pain conditions, neuropathic facial pain can be of nociceptive or neuropathic nature, generally with the presence of concomitant psychological and socioenvironmental factors.[4-6] Common symptoms included depression, anxiety, sleep disturbance, and disability.[7-10] Because of the complex interplay of various physiologic and psychologic factors, management of chronic pain is often thought to require a multimodal treatment approach. In some cases, opioids may be considered at earlier stages in the treatment process, occasionally before better established interventions are pursued.

There are potential pitfalls to the early use of opioids with similar orofacial pain patients, or all patients who have not been considered for a full compliment of other therapies. While opioid therapy is evidence based and well accepted for cancer pain,[11] opioid therapy for non-cancer orofacial pain is somewhat controversial because of side effects, physical tolerance, and lack of sufficient long-term evidence.[12-14]

There is also increasing evidence to support the notion that chronic opioid therapy may in fact have a paradoxical effect and increase pain, so-called opioid-induced hyperalgesia.[15] Opioid tolerance may also develop a process of negative cellular adaptation that leads to diminished effects of opioids. This may be accompanied by the activation of a pronociceptive system, a positive cellular adaptation that may increase pain perception. As a proposed mechanism for this phenomenon it has been shown that there is activation of NMDA-R and protein kinase C, as well as regulation of glutamate transporters. This neuroplasticity associated with the development of

opioid tolerance may activate the pronociceptive mechanism in the CNS that could counteract the analgesic effect of opioids and lead to opioid-induced hyperalgesia.

CASE REPORT

A 27-year-old female working teacher and a graduate student presented with a complaint of left-sided ear and tongue pain.

She described severe pain on the posterior one third of the tongue on the left side, constant, dull, and tingling in nature [Numerical graphic rating scale (NRS): 6 out of 10]. Secondarily, she described ear pain on the left side, intermittent and dull in nature, occurring usually every day (NRS 3 of 10). Additionally, she complained of intermittent, dull, and throbbing pain on the left side of the face, associated with ear pain.

History of present illness

Onset of facial pain occurred approximately 7 years earlier, reportedly after a "viral infection." The relationship to this event and her pain was unclear. Subsequent consultations with multiple healthcare professionals included imaging studies, with early images showing a lesion in the area of the glossopharyngeal nerve. This was originally thought to be a vascular loop, and unrelated to her primary facial complaint. At that time, she was tried on multiple pharmacotherapeutic agents at a therapeutic dose, including anticonvulsant agents and various antidepressants. In 2005, she discontinued all medications as pain improved. After undergoing a series of multiple minor dental procedures, symptoms returned with the same or increased intensity. Additional multiple imaging studies revealed no conclusive findings. She received a diagnosis of neuropathic pain of "unclear etiology," and arrived at the Facial Pain Center on a drug regimen of levothyroxine 125 mcg/d, morphine 290 mg/d, amitriptyline 150 mg/d, and citalopram 10 mg/d, having been at these dosage levels for one year. In addition to persistent and increasing pain, she reported weight gain, dry mouth, constipation, and fatigue since the initiation of the pharmacotherapy regimen.

Past medical and surgical history

Medical history was notable for Graves disease, while her thyroid function studies were within normal limits. She had no psychiatric history or a history of substance abuse.

Physical examination

She had tenderness of her temporalis, pterygoids, and left masseter muscles. She reported hyperpathia, ie, exaggerated pain sensation to palpation. Movement of her temporomandibular joints were within normal limits, as under 40 mm of maximum opening is considered compromised.[16] She also displayed a normal range of neck motion. Examination of all cranial nerves was grossly normal. Specific examination of trigeminal nerve did not reveal any hyperesthesia, hyperalgesia, or allodynia. There was no trigeminal neurosensory deficit or facial weakness. The uvula was midlined and without deviation, and the gag reflex was normal. Tongue protrusion was midlined without deviation. The dorsal mucosa of the tongue appeared to have normal papillae without any gross pathology.

Psychological assessment

Psychosocially, she failed to show significant affective or anxiety symptoms per an initial screening interview with the psychologist, and results from the baseline SCL-90 psychological screening questionnaire were essentially within normal limits. However, she did admit to a range of mild anxiety symptoms and adjustment difficulties secondary to pain. Social supports were positive, and there was no disability behavior. There was no evidence of oversomatization, and symptoms were localized to the face. Substance abuse issues were absent, and there was no history of adherence problems with her opioid or other pharmacotherapy regimens.

Diagnosis

The primary diagnostic impression was neuropathic facial pain. Secondarily, she was thought to have a myofascial pain disorder of her masticatory muscles. Mild anxiety symptoms were present as noted above, and consistent with a patient reporting treatment-resistant chronic pain.

Treatment recommendations

Treatment recommendations included

1. Tapering and elimination of opioid therapy regimen.
2. Tapering and/or adjustment of other pharmacotherapy.
3. Occlusal appliance therapy to address myofascial pain.
4. Biobehavioral therapy with a clinical pain psychologist to assist with the patient's anxiety and concerns related to the medication tapering program.

Given the above presentation, she previously met commonly accepted criteria for chronic opioid therapy, while she reported an interest in decreasing her opioids. She was administered the standardized SOAPP[17] chronic opioid therapy screening questionnaire (Score = 4) and DIRE[18] clinician screening scale (Score = 18), with both scores suggesting low risk with respect to chronic opioid therapy.

Treatments and relevant changes in symptoms and signs

Treatment was initiated with dental appliance therapy for the myofascial components of her pain. This is a physical medicine device commonly used with jaw-muscle rehabilitation. Theoretically, the appliance alters muscle and joint mechanical factors that are likely contributory to the muscle pain. These maxillo-mandibular reorientation devices are hard acrylic in composition, and are typically used in the patient day and night over a series of weeks with anticipated positive benefit.[19]

In addition to targeting her pain level and mild anxiety symptoms, behavioral therapy was initiated to assist that patient with the opioid tapering regimen. An initial goal was to reduce the dose of morphine by 30 mg/d every week over a period of 2 months, while we elected a slower schedule based upon the patient's concern over possible pain exacerbation.

Biobehavioral treatment included a series of four individual cognitive therapy sessions with a behavioral psychologist. The initial treatment focus included discussion of the physiological muscle responses to her worry and stress, and their relationship to her pain. The patient also had concerns that her tapering schedule would result in an exacerbation of pain. She was frequently fearful of leaving home and having an episode of pain exacerbation. Relaxation training and "self-calming" strategies were also used to lower autonomic arousal at work and school. These included brief, cue-controlled techniques that could easily be integrated into her daily activities.[20]

The patient displayed some maladaptive behavior patterns that included extended period of reclining after work, and this had additional negative impact on her quality of life and relationship with her fiancé. She was started on a daily quota-based walking program, and initiated a slow progression to jogging, and activity interest for her and her fiancé.

Within 2-3 weeks, she showed improvement in her facial pain. Her tongue and ear pain ratings were only slightly improved. Within 6 weeks, her symptoms progressively improved (NRS-tongue 3 out of 10 and NRS-ear 1 out of 10), and she had reduced the intake of morphine to 160 mg/d. The amitriptyline dose was maintained at 150 mg/d and morphine was reduced to 120 mg/d with a fixed tapering schedule.

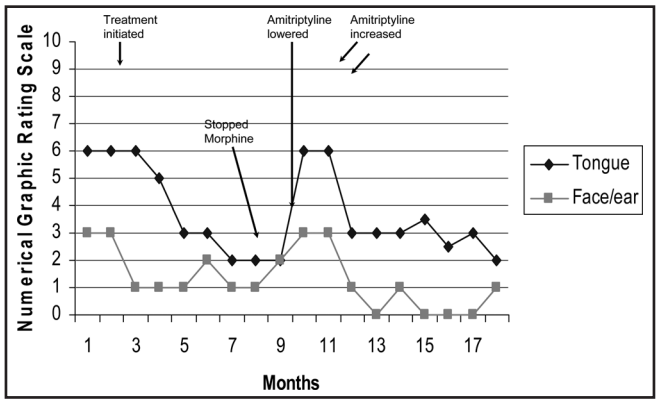

Figure 1. Changes in symptoms over course of 18 months.

After 3 months, she was given morphine 60 mg, amitriptyline 150 mg, and citalopram 10 mg/d. On NRS, tongue pain was 2/10 and ear pain was 1/10. She continued with biobehavioral treatment. She was also advised to discontinue citalopram at this time as her mood remained substantially improved.

Treatment continued with one visit per month for a period of 8 months after the initiation of treatment. She discontinued morphine and citalopram, and continued to be free of ear and facial pain. She did have persistent tongue pain, but it had become episodic (NRS 3/10). At this time, she was taking ibuprofen 400-600 mg and amitriptyline 100 mg/d. Amitriptyline was further lowered to 75 mg/d. At this time, her pain escalated (See Figure 1). A therapeutic effect from the tricyclic antidepressant dose was assumed, and on her next visit she was advised to return to an increased dose of 125 mg/d amitriptyline. Her pain levels went down within about 4-6 weeks following continuation of behavioral management and pharmacotherapy regimen.

She was advised to continue episodic follow-up with the clinical psychologist, given the continued benefit that she reported. A final behavior therapy session included consolidation of coping skills and assessment of overall outcome. Results from the Short Form-36 VI scale[21] (Mean PCS = 45.70; mean MCS = 51.28) and subscales suggested that the patient continued to have mild physical functioning difficulties secondary to pain, in comparison to general population normative date for her age group. Mental health scores suggested adequate coping, while mild affective/adjustment problems were present. At an 8-month follow up, the patient continued with minimal pain and also continued with behavior therapy monthly, amitriptyline 100 mg/d and occasional ibuprofen 400 mg.

DISCUSSION

This patient presented to a university-based facial pain center after 7 years of multiple treatments. These were

chiefly comprised of various medication trials including chronic opioid therapy. While adherent to her high-dose opioid regimen, her pain complaints persisted. The efficacy of opioid treatment in the present case could be called into question. Some clinicians might have pursued an approach that recommended an increase in her opioid dose. Indeed, by most standards[22] she did not display significant risk factors for chronic opioid therapy or serious mediating psychosocial issues.

Clinical experience and recent investigations suggest that patients on opioid therapy can suffer from increased pain due to opioid-induced hyperalgesia.[22,23] In comprehensive meta-analysis on opioid-induced hyperalgesia, Angst and Clark[23] summarize that use of alternative analgesics and detoxification from opioids should be considered to better manage such patients. Although ibuprofen was an unusual choice in this patient, she obtained relief with it. Hence she continued to use ibuprofen occasionally.

Despite the absence of serious mediating psychosocial issues, adjunctive behavioral management was chosen as an important component of her treatment, particularly with respect to the tapering sequence. Any opioid tapering regimen can be difficult for patients, even for those with few major coping deficits. For the management of neuropathic pain, The International Association of Study of Pain (IASP) recommends the recognition of the need for behavioral and psychological approaches in addition to pharmacotherapeutic management.[24] Gilron et al.[25] have summarized the guidelines for treatment of neuropathic pain and the first line of recommended treatment is nonpharmacologic treatment (eg, physiotherapy, psychological interventions). In contrast, recommendations of the fourth international conference on the mechanisms and treatment of neuropathic pain[26] include opioids as the first line medication treatment. In this case, the patient would appear to have had an adequate trial of a long-acting opioid.

There is some debate with respect to the benefits of tapering patients over a short versus long period of time. Tapering of this patient could have been relatively rapid if the schedule was based upon the half-life of this particular agent, with a reduction of 20 percent over every three days.[27] In this case, integration of behavioral and dental interventions required a longer time frame, and she had the opportunity to develop adequate coping skills over time.

Patient behavior is accepted to be important in the development and maintenance of chronic pain, and most patients develop concomitant anxiety and affective symptoms. Biobehavioral approaches have been the mainstay of treatment, even in cases where serious psychopathology is absent.[14,28] With this patient, the interdisciplinary focus for her treatment addressed the psychological and myofascial associated factors. Pain relief may have been due to the reduction of opioids, dental appliance therapy, nortriptyline or behavioral therapy, or a combination. The authors do suspect that successful opioid tapering was attained mainly as a result of behavioral therapy, given the patient's self-report of benefit from this approach. Discontinuation of opioids may be associated with improvement in symptoms and improved quality of life, while adjunctive therapies are likely to assist.

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