

# Interventional pain management for a patient with chronic post-traumatic headaches after a traumatic brain injury

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Dear Editor,

Traumatic brain injuries (TBI) and chronic post-traumatic headaches (PTH) have affected many military personnel. The increasing use of improvised explosive devices have made blast- and explosive-related head injuries more common than in previous wars [1, 2]. Data from Operation Enduring Freedom, Operation Iraqi Freedom, and Operation New Dawn demonstrate that a significant portion of military TBIs are caused by blast-related injuries [3, 4]. From 2000 to 2016 more than 350,000 military service members were diagnosed with a TBI [4]. Military troops are at greater risk of developing PTH from head injuries that arise during deployment to combat zones. These patients can be extremely challenging because they often suffer from comorbid conditions including depression and post-traumatic stress disorder (PTSD). Additionally, there is a lack of high-quality studies on the treatment of PTH [5]. This brief report describes a patient who suffered from chronic PTH after sustaining a mild TBI, and our results with greater occipital and auriculotemporal nerve blocks.

The patient was a 42-year-old male with a history of a mild TBI related to a blast-related injury. The patient had been suffering from chronic PTH for several years since his initial trauma. The patient reported no significant headache history prior to his mild TBI. The headache had migraine-like features as he described it as throbbing and pulsatile in nature and occurring

in the occipital and temporal regions bilaterally. The headache was associated with nausea and occasional photophobia. He noted a numerical pain score of 9/10 severity on average with his headaches. The patient reported roughly 15 headache days a month for the past several years and noted that the headaches had been increasing in severity. The patient reported that the headaches were not associated with any aura and would last roughly 2–6 hours when they occurred. The headache was not relieved by acetaminophen, nonsteroidal anti-inflammatory drugs (NSAIDs), tricyclic antidepressants, or topiramate. He also tried triptan medications for abortive therapy, without success. He reported mild relief with gabapentin and pregabalin but was unable to continue these medications due to side effects including sedation and problems with cognition. The patient presented to the pain clinic and was consented for greater occipital nerve blocks (GONB) along with auriculotemporal nerve blocks (ATNB).

The patient underwent bilateral GONB with the use of 4 mL of 0.25% bupivacaine mixed with 40 mg of methylprednisolone divided equally and injected around each nerve approximately 2 cm lateral and 1 cm inferior to the external occipital protuberance after negative aspiration. Then another 1 mL of 0.25% bupivacaine without steroid was used on each side for the ATNB by injecting roughly 1 cm anterior and 1 cm superior to the

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level of the tragus. No complications were noted following the procedures. The patient presented to the clinic with a current headache and reported near complete resolution of symptoms within 10 minutes of the nerve blocks with a pain score of 1/10. During a follow-up appointment the patient reported significant improvement of his headache symptoms. He reported that the blocks provided him with significant relief for 8 weeks. He noted that his headache intensity averaged 3/10 severity on a numerical pain scale, down from his original score of 9/10. The pain gradually started to return after 8 weeks, but he still had moderate relief for roughly 12 weeks, noting an average headache intensity of 5/10 severity during that time. Additionally, the patient reported that his headache frequency had decreased to roughly 10 headache days a month. He continues to get relief with repeat injections as needed every 3–4 months. The patient continues to report consistent results with repeat injections with no side effects.

Chronic PTH related to TBIs can be especially challenging to manage, and these patients may present to headache and pain specialists with increasing frequency in the future. Physicians with an interest in headache disorders may be challenged with these patients because there are limited high-quality studies describing the best management of this condition [5]. Peripheral nerve blocks appear to offer a safe and effective treatment option for patients suffering from these difficult conditions. These nerve blocks have proven to be useful for a variety of headache disorders including postdural puncture headaches as well as occipital neuralgia and cervical headaches [6–8]. Our patient demonstrated significant improvement with these safe and relatively easy to perform injections. Anaesthesiologists and pain management specialists with an interest in headaches should consider these nerve blocks in the treatment algorithm for patients with challenging headache disorders.

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