Short Title: Postherpetic Neuralgia Pain Relief with BOTOX

Full Title: Pain Relief with OnabotulinumtoxinA (BOTOX) in Refractory Postherpetic Neuralgia of the Ophthalmic Division of the Trigeminal Nerve: A Case Report

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Abstract

Postherpetic neuralgia (PHN) is a particularly challenging pain condition that leaves many patients with a severely affected quality of life. When PHN affects the trigeminal nerve, it is an even more refractory condition. Traditional medical and interventional treatments pose numerous risks associated with adverse effects. We present the case of a 69-year-old female with severely refractory PHN of the ophthalmic division of the trigeminal nerve who received pain relief after onabotulinumtoxinA (BTX-A) injection.

Glossary of Terms

PHN: postherpetic neuralgia

BTX-A: onabotulinumtoxinA

Introduction

Postherpetic neuralgia (PHN) is a chronic painful condition affecting many elderly and immunosuppressed patients. Fifty-six percent of patients have affected thoracic dermatomes and up to 25% of patients manifest with cranial or trigeminal nerve involvement, most commonly the ophthalmic division. Trigeminal PHN is typically a particularly difficult and unremitting condition to treat, leaving many patients hopeless and unable to continue activities of daily living. Conservative therapies include topical analgesics, oral anticonvulsants, and antidepressant agents as first-line medications; however, all have had limited evidence of efficacy and notoriously intolerable side effects.[1,2] Common advanced therapies for treating PHN include peripheral nerve stimulation, gamma knife surgery and gasserian ganglion injection,

each of which carry notable procedural risks. We describe a case of intractable postherpetic neuralgia of the ophthalmic branch of the trigeminal nerve that responded to onabotulinumtoxinA (BTX-A) injection with impressive effects on pain, pruritus, excessive mucus secretion, lacrimation, and anisocoria. A written HIPAA authorization to use and disclose existing protected health information as well as patient photographs in this case report was obtained and saved in the patient's medical record.

Case Description

Our patient is a 69-year-old female with a history of metastatic non-small cell lung cancer receiving chemotherapy treatment who presented with a 3 month history of PHN of the right ophthalmic branch of the trigeminal nerve. She described painful allodynia, throbbing, excessive lacrimation, mucus production and severe pruritus. She also noted sensation of increased temperature and diaphoresis involving her right forehead. Of note, her right pupil appeared dilated compared to the left. The pain was so severe that the patient had taken to self-mutilation by scratching her forehead for pain relief. She presented with erythema and excoriations of the supraorbital region. All infectious causes were ruled out by the ophthalmology clinic.

She presented initially on methadone 2.5 mg Q8H, gabapentin 900 mg TID, and hydrocodone/acetaminophen 10/325 mg Q4H PRN. We discontinued methadone for ineffectiveness, continued hydrocodone/acetaminophen PRN (taking 5-6 daily) and increased gabapentin to 1200 mg TID. Patient then discontinued gabapentin due to ineffectiveness.

On initial visit, the patient described pain radiating from the right occiput to the right forehead. An occipital nerve block was subsequently performed; however, no pain relief was attained. During this period, her ophthalmologist had also prescribed steroid and antibiotic eye drops without resultant relief. We then prescribed carbamazepine and duloxetine; however, patient developed a severe rash requiring an emergency room visit after starting these medications, and both medications were then discontinued. She had reported a history of adverse effects to pregabalin. She was willing to try pregabalin again; however, costs were prohibitive. Nortriptyline 50 mg QHS was started, but no relief was achieved. A supraorbital nerve block was subsequently performed; however, there was no relief. A stellate ganglion block was offered to the patient; however, she was fearful of the adverse effects and elected not to proceed. Over the following year, she continued to be seen by the ophthalmology clinic and was prescribed numerous eye drops, which patient believed may have exacerbated her pain. We then discussed alternative treatments, including peripheral nerve stimulation and ketamine infusion; patient declined to pursue invasive treatment. We then continued hydrocodone/acetaminophen 10/325 mg 5 to 6 tablets daily PRN and initiated a trial of lamotrigine 25 mg BID. The patient first reported minimal improvement, but then discontinued lamotrigine due to ineffectiveness.

BTX-A was then injected into the forehead via modified migraine protocol (10 units corrugator bilaterally, 5 units procerus, 20 units frontalis, 45 units total). Three days post-procedure, the patient reported 60-70% relief.

At 2 months follow up, the patient reported 100% resolution of neuropathic pain. Notably, her right pupil size appeared decreased after BTX-A injection compared to pre-injection. The patient was then able to decrease her hydrocodone/acetaminophen to 3 tablets daily, of which she stated she took for chronic back pain and not facial pain.

Discussion

PHN is a difficult condition to treat effectively given limited treatment options, high costs of treatments, and potential adverse effects. Two recent studies have demonstrated efficacy in using subcutaneous BTX-A for the treatment of PHN.[3,4] Other techniques include peripheral nerve stimulation, gamma knife, deep brain, and motor cortex stimulation; however, each have had limited evidence. The mechanism of pain relief from BTX-A injection is not well understood but is theorized to be due to the inhibition of neuropeptide release from peripheral nociceptive nerve endings. Through this mechanism, the neurotoxin may inhibit peripheral sensitization and neurogenic inflammation. Xiao et al. were the first to publish a randomized controlled trial that examined the effectiveness of subcutaneous injection of BTX-A in reducing PHN pain.[4] They found that BTX-A attenuated pain associated with mechanical allodynia. Our patient experienced reduced pain (allodynia), burning, pruritus as well as a reduction in pupil size after one BTX-A treatment. Given the relatively safe profile of this toxin compared to side effect-laden medications and riskier invasive blocks and nerve stimulation, BTX-A may be a safer and more effective alternative for treating refractory postherpetic neuralgia of the trigeminal nerve.[5]

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