Challenging Pain Management in a Patient with Trigeminal Neuralgia Secondary to Multiple Sclerosis

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ABSTRACT

Patients suffering from multiple sclerosis (MS) often develop neuropathic pain. Trigeminal neuralgia (TN) is the most common type in these patients. The pain is characterised by recurrent, unilateral, brief, electric shock-like episodes, abrupt in onset and termination, and limited to the distribution of one or more divisions of the trigeminal nerve, which is difficult to treat when compared to classical TN. The recommended first line of therapy includes medications like carbamazepine, lamotrigine, baclofen, and gabapentinoids to which most of the patients respond well with mild to moderate side effects. Some patients do not respond to conventional pharmacological therapy and may require a combination of other pain medications.

A 30-year female patient presented in the pain clinic with TN due to MS and was treated with carbamazepine. However, due to severe side effects she had to quit its use. The patient was then successfully treated with an intravenous infusion of lidocaine and remained pain-free without any other pain medications.

Key Words: *Trigeminal neuralgia, Multiple sclerosis, Lidocaine.*

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INTRODUCTION

Trigeminal neuralgia (TN) is described by the International Headache Society as "A disorder characterised by recurrent unilateral brief electric shock-like pains, abrupt in onset and termination, limited to the distribution of one or more divisions of the trigeminal nerve and triggered by innocuous stimuli. It may develop without apparent cause or be a result of another diagnosed disorder."[1] The recommended first line of therapy includes medications like carbamazepine, lamotrigine, baclofen, and -gabapentin to which most of the patients respond well, with mild to moderate side effects of these medications.[2] Some patients do not respond to conventional pharmacological therapy and may require combination of other pain medications in combination with gamma knife or microvascular surgery.[3] Intravenous/topical lidocaine and magnesium alone or in combination have been used to treat resistant severe pain.[4-6]

There are many causes of TN. TN attributed to multiple sclerosis (MS) occurs in 2–5% of the patients, usually unilateral but sometimes bilaterally. Patients with TN secondary to multiple sclerosis benefit less from pharmacological and surgical interventions than those with classical TN.[1]

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We herein present a case of a patient who had TN due to MS and was treated with carbamazepine but due to severe side effects she had to quit first-line medication. The patient was then successfully treated with an intravenous infusion of lidocaine.

CASE REPORT

A 30-year woman, diagnosed case of MS in 2018, presented to the pain clinic with left-sided facial pain, very severe in intensity and involving V1 division of the trigeminal nerve. The patient sometimes felt a current-like sensation which was not aggravated or relieved by any means; this pain was affecting her daily lifestyle and sleep. She was taking the tablet topiramate 50mg for pain which was prescribed by a pain physician from some other hospital but her pain did not relieve. On her first visit to our hospital, based on clinical features, a provisional diagnosis of TN was made and she was prescribed carbamazepine 200mg twice daily. She visited after 20 days for follow-up in the pain clinic but her pain did not relieve and her sleep was very much disturbed. This time, we increased the dose of carbamazepine to 200 mg thrice daily.

After 40 days, on her 3rd visit, she had relief in pain of up to 60% but she developed severe side effects of carbamazepine including profound sedation, drowsiness, and dizziness and she was unable to focus on work. We offered her the treatment option of lidocaine infusion and informed her about the associated side effects and complications. After obtaining written consent, she was admitted as a daycare case, standard monitors were applied to the patient including ECG, non-invasive blood pressure, and pulse oximeter. A 20-gauge intravenous

cannula was secured and fluid infusion started at 100 ml per hour. Her weight was 60 kg. Initially, paracetamol 1g infusion over 15 mins was given and lidocaine 1 mg per kg bolus was administered over 10 min, followed by lidocaine infusion @ 2 mg/kg/hour for 2 hours. She received a total dose of 300 mg (60 mg + 240 mg infusion). One hour after starting the lidocaine infusion, she developed mild numbness at the tip of her tongue but did not develop any other complication and remained stable throughout the infusion period. She was observed for 4 hours after completion of lidocaine infusion and pain severity was assessed. She was completely pain-free after which she was discharged from the hospital and was advised to stop carbamazepine gradually over a period of 10 days.

On her subsequent follow-up visits, after 45 days and 8 months in the pain clinic, she was completely pain-free and was doing comfortably her daily activities. During this time period, she did not use any other pain medications.

DISCUSSION

MS is defined as a chronic inflammatory disease that causes demyelination and degeneration of the axons in the central nervous system.[7] Patients suffering from MS often develop neuropathic pain and TN is the most common type of neuropathic pain in these patients, which is difficult to treat when compared to classical TN.[7] Literature has shown that it is more common in females, usually occurs unilaterally and involvement of second or third branch of trigeminal nerve is more common. This case was a young female having left-sided facial pain involving the first branch of the trigeminal nerve. Mohammadi *et al*. used different modalities including, minimally invasive, non-pharmacological and pharmacological modalities, which included balloon compression, radiofrequency thermocoagulation, microvascular decompression, percutaneous glycerol injection and stereotactic radiosurgery but they found overall recurrence rate of 66%.[8] In pharmacological modalities, they did not use lidocaine in any patient.

Lidocaine has been used in different forms and concentrations for the treatment of TN, such as intravenous infusion in 2% and 5% concentration or in form of lidocaine patch. Zhu *et al.*, have shown in a meta-analysis that intravenous lidocaine effectively controls pain immediately in post-infusion period in patients with neuropathic pain but it fails to provide long-term analgesia.[5] They also found that lidocaine infusion was associated with an increased risk of side effects compared to the placebo; however, the risk of serious adverse events is negligible. In the present case, the patient remained pain-free for more than eight months after the infusion and the patient did not develop any serious side effects and did not use any co-analgesia. There is no separate guideline for the treatment of TN secondary to MS; although, the treatment strategies of classical TN are different. For the treatment of classical TN, the American Academy of Neurology (AAN) guidelines regarding recommended use and best practices, do not recommend lidocaine[9] but Royal College of Surgeons of England guidelines for the treatment of TN 2021 has mentioned intravenous use of lidocaine as an adjuvant but not as a first or second line of treatment.[10] In this case, the patient's pain control was very effective with a single session of lidocaine infusion without any serious side effects.

In countries like Pakistan, where there is a shortage of expert pain physicians and issues of affordability, it is a very simple therapy which does not require any expertise. The drug is readily available. It provides immediate pain relief and overall, it is very cost-effective as well. More evidence for the use of lidocaine as a sole agent and as a first-line therapy, especially for acute exacerbation of pain is required. This is another area of future research in the field of pain management. Moreover, there is also a need for developing local guidelines for better pain management.

PATIENT'S CONSENT:
Informed consent has been obtained from the patient to publish the case.

COMPETING INTEREST:
The authors declared no competing interest.

AUTHORS' CONTRIBUTION:
MY: Conception, design, manuscript writing, and review.
AR: Design, literature search, manuscript preparation, manuscript editing, and review.
All the authors have approved the final version of the manuscript to be published.

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