CASE REPORT

Topiramate-induced Neuropathy Mimicking Carpal Tunnel Syndrome: A Case Report

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Abstract

Carpel tunnel syndrome (CTS) is a condition in which median nerve compression results in paresthesias and pain in the wrist and hand. We are going to report a rare case of topiramate-induced neuropathy which clinically resembles CTS. Discontinuation of topiramate resulted in spontaneous resolution of numbness, paresthesia and pain in a few days. High clinical suspicion is advised in patients who are on topiramate and present with signs of compressive neuropathy.

Level of evidence: V

Keywords: Adverse events, Carpel tunnel syndrome, Neuropathy, Topiramate

Introduction

Carpal tunnel syndrome (CTS) is a compressive focal mononeuropathy resulting form the compression of median nerve as it traverses through the carpel tunnel under the transverse carpal ligament. It is most commonly manifested by paresthesia, pain, and sometimes, weakness in the median nerve distribution. The estimated prevalence of CTS is between 4% and 5% in the United States; the affected individuals are primarily between 40 and 60 years of age (1). The incidence is higher in females (3.6/1000) compared to males (1.7/1000) of the similar demographics with an overall incidence of 2.7/1000 (2). The pathophysiology of CTS is multifactorial and is thought to be related to increased pressure on the median nerve (3). Idiopathic CTS is more common than the secondary types; risk factors include female gender, obesity, diabetes, hypothyroidism, pregnancy, genetic predisposition, and occupational factors (4). Literature review further suggests the possibility of beta-blockers and anastrazole (an aromatase inhibitor) to be associated with a greater incidence of CTS, which completely resolves following their discontinuation (4, 5). In addition, chemotherapy-induced neuropathies have also been reported to have clinical presentation resembling CTS (6). A study derived from data of cross-sectional 2010 National Health Survey reported an association between CTS and migraine headaches with CTS prevalence of 8% in those with migraine headaches compared with 3% in those without migraine headaches (aOR, 2.67; 95% CI, 2.22 – 3.22). While the study successfully controlled the confounding by demographic, health status and behavior covariates, it did not comment on the use of concomitant medications that could have potentially attributed to this observed association between migraine headaches and CTS thus limiting the value of its findings (7).

We report a case of a patient who developed CTS-like symptoms shortly after initiation of topiramate treatment. The patient presented for pre-surgical evaluation prior to undergoing carpal tunnel release. To our knowledge, this is the first description of topiramate-induced paresthesia presenting as classic CTS which resolved spontaneously and completely after discontinuation of topiramate treatment.

Case presentation

A 38-year-old female with a past medical history significant only for migraine headaches was evaluated for a new onset bilateral lateral epicondylitis in an

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outpatient setting. At the time of her 1-month follow up status-post corticosteroid injection to her left lateral epicondyl, patient complained of having newly developed numbness and tingling in her fingers bilaterally, which had worsened over a few days and were refractory to splints that she wore on her wrists at night (as part of the lateral epicondylitis treatment). All of her fingers were involved with worse numbness and tingling affecting the radial 4 digits of her hand and palm with escalation of symptoms at night. Besides starting migraine prophylaxis with topiramate 50 mg twice daily orally, patient's history had remained uneventful during that 1-month follow up period. Although unable to recall the exact timing of appearance of the paresthesia with respect to initiation of topiramate, the patient admits experiencing symptoms soon after initiating topiramate. Targeted physical examination revealed soreness over the carpal tunnel. The Durkan's compression test as well as Phalen and reverse Phalen maneuvers reproduced numbness and tingling symptoms in the first four digits bilaterally. The scratch collapse test was also mildly positive on carpal tunnel area bilaterally, but negative over the dorsum of the hand as a control. The patient was then sent home with a recommendation to wear nighttime wrist splints in neutral position in both hands. Upon failure of splinting, she was referred for an electromyography (EMG) study to help confirm the diagnosis of CTS for possible surgical evaluation. Results of the EMG study were normal for motor and sensory nerve conduction of median and ulnar nerves bilaterally. The patient was then encouraged to contact her neurologist for a possibility of topiramate causing her symptoms. The symptoms spontaneously resolved within days soon after the discontinuation of topiramate. At the 8 month follow up visit (for an unrelated complained), she exhibited no symptoms or physical examination signs of carpal tunnel syndrome. She had not resumed topiramate treatment.

Discussion

Although peripheral neuropathy presenting as paresthesias is a well-known side effect of topiramate, this case report is of a significant value as it illustrates its manifestation as classic CTS. According to the American Academy of Orthopedic Surgeons treatment guideline, early surgery is an option based on the clinical diagnosis of CTS, as in this case, without the need of confirmatory electrodiagnostic evaluation. Studies have shown that 13% of patients with symptomatic CTS have a negative electrodiagnostic workup (negative electromyography and nerve conductions studies) (8). Although the exact mechanism responsible for development of this patient's symptoms is unknown, spontaneous resolution of the symptoms after discontinuation of topiramate strongly suggests its role as a causative agent in this particular patient.

Topiramate and Paresthesia

Topiramate is an antiepileptic drug that is indicated for initial therapy for newly diagnosed focal and mixed seizure disorders as well as a monotherapy for refractory generalized tonic-clonic convulsions in adults and children (9). Topiramate is also shown to be effective in migraine prophylaxis. As it is the case with many other antiepileptic drugs, the non-specific pharmacologic behavior of topiramate is likely to contribute to its variety of adverse drug events (10). Paresthesia is a known side effect of topiramate treatment and most likely reflects topiramate-related inhibition of carbonic anhydrase enzyme. In a study evaluating 386 patients receiving topiramate 100 mg/day, the overall incidence of paresthesia was 50.5% while the cumulative incidence of this adverse events was 42.5% by day 28 and reached 49.5% by day 42 (10). Although some studies have reported that the topiramate-induced paresthesias resolves spontaneously over time, one study failed to demonstrate this phenomenon (11-14). In another study of 149 patients receiving topiramate the average time of onset of paresthesia was 2.8 days after the initiation of topiramate treatment (14).

Ultimately, a high clinical suspicion is needed to rule out drug-induced CTS with topiramate as it can be mistaken for classic CTS. This patient met all clinical criteria for carpal tunnel syndrome and was undergoing evaluation for CTS with a direct path to unnecessary surgical intervention. Clinical vigilance and a trial of weaning from topiramate under the supervision of the prescribing physician is encouraged in patients with signs of CTS who are on this medication. As reported in this case, stopping topiramate may resolve all symptoms and potentially avoid undue surgical risk.

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