Vertigo Secondary to Fluoroquinolone Neuropathy: A Case Report

Gregory Cofano, D.C.¹
Michael Hennings, D.C., D.I.B.C.N.²
Adam Sergent, D.C., C.C.S.P.³

Abstract

Objective: To describe the use of chiropractic care and co-management in a patient with vertigo.

Clinical features: A 68-year-old male sought care for vertigo of 4 years duration. He had seen numerous providers and specialists with no improvement in his symptoms.

Intervention and Outcome: Based on history and examination, the patient was given a diagnosis of fluoroquinolone-associated vertigo. The diagnosis was confirmed by a medical neurologist. Alternative diagnoses were excluded by an otolaryngologist.

Conclusion: Chiropractors who see patients with vertigo should carefully consider iatrogenic etiologies when symptoms are not readily reproducible.

Key Words: Vertigo, neuropathy, fluoroquinolone, antibiotics, chiropractic

Introduction

Vertigo is not classified as a single disease, but a classification of symptoms that may arise from different body systems. Vertigo often arises from the inner ear, but can also have its origin in the brainstem or cerebellum. Patients experiencing vertigo may be seen by chiropractors and it is one of the more common reasons that outpatients will visit a physician’s office.¹

When evaluating vertigo, practitioners must investigate the potential dysfunction of the vestibular end organs, cranial nerve VIII, its nuclei in the brainstem and the cerebellum. Benign paroxysmal positional vertigo (BPPV) and neuritis of the vestibular division of the eighth cranial nerve have been identified as the most common cause of vertigo.² Meniere’s disease may cause vertigo as well.² This disease is not fully understood but believed to arise from abnormal volume changes of endolymph in the cochlea and labyrinth.³ Meniere’s disease is a disorder of the inner ear with spontaneous episodes of vertigo and associated hearing loss. These episodes can last from 20 minutes to 4 hours and patients may report a sensation of fullness of the ear or tinnitus. These patients are typically in their fifth or sixth decade of life.

Red flags and serious conditions such as stroke and neoplasm must always be a consideration if a peripheral vestibular disorder is excluded.² Ototoxic effects from medications are quite common.⁴ Since the 1940s, physicians have been aware of ototoxicity; current research attempts are examining the effects of medications as cochleotoxic or vestibulotoxic.⁵ Clinicians need to obtain a through history and current medication list and recognize adverse side effects of various medications. A less common cause of vertigo is neuropathy of the eighth cranial nerve, and exceedingly rare is vertigo from cranial nerve neuropathy due to ototoxicity of medications.⁶ ⁷

Currently, there is little information linking vertigo from cranial nerve VIII neuropathy due to adverse events involving fluoroquinolone antibiotics. The purpose of this case report is to describe the evaluation and diagnosis of a patient with vertigo due to suspected fluoroquinolone neuropathy of the eighth cranial nerve.

Case Report

A 68-year-old male sought care for evaluation of vertigo of 4 years duration. He described the onset as insidious and very sudden. He stated that the initial onset caused him to fall out of his chair while he was sitting at his dining room table and it lasted for 3 hours. He also complained of a long-standing
tinnitus, the onset of which does not correlate to his vertigo. At the time, he took his own blood pressure, which never changed even during an episode of vertigo. He had seen a medical specialist and had an MRI, MRA, neurosurgical consult, ECG, cardiology consult, Doppler ultrasound, and consultation at the Cleveland Clinic. Meniere’s disease had been considered but excluded several times. He had been diagnosed with a “leaky aortic valve” but was told it is unrelated. At the time, he reported episodes lasting approximately three days, followed by relief for a period of about five weeks. He also reported having “dizzy spells” and that deep breathing and meditation helped. He was given a portable pulse oximeter and was instructed to check his O2 saturation during an episode of vertigo to rule out hypoxia. His levels did not change during these episodes. The patient also complained of migraines, cluster headaches, and a “pinched nerve in the neck,” which is associated with a “grinding sound.” He described temporary blindness when he had headaches. The onset of his migraines was several years prior to the onset of his vertigo. He also complained of memory problems and had a long family history of Alzheimer’s disease. Significantly, he had an increased prostate specific antigen level and was told that he likely had prostate cancer. However, twenty-six subsequent biopsies were performed due to the high PSA levels, and all were negative for cancer. Interestingly, his urologist put him on antibiotics for eight months because of a concurrent prostate infection (fluoroquinolones as reported by patient). This use of antibiotics started about the same time as his vertigo.

Examination finding included a negative Swivel Chair Test for reproduction of vertigo with or without the head held in a stationary position.5 Epyle’s maneuver was performed and did not reduce his vertigo.9 Cranial nerve examination revealed abnormalities in CN V and CN VIII. Light touch to the face (CN V) felt “sharper” on the right than it did on the left in both the temporal and maxillary divisions of the trigeminal nerve. Weber’s test lateralizes to the left.10 Rinne’s test was within normal limits on the right.10 He stated that his hearing was better on the left and when he talks on the phone he uses his left ear even though he is right-handed. All other cranial nerves were unremarkable. Cervical radiographs were unremarkable.

This patient was started on a trial course of conservative care including chiropractic adjustments and cervical spinal decompression therapy. These treatments did not reduce his vertigo. A referral was made to a medical neurologist to confirm fluoroquinolone-induced vertigo secondary to cranial neuropathy. This neurologist suggested further testing to rule-out Meniere’s disease. The results of a hearing test performed and interpreted by an ENT again excluded Meniere’s disease as a potential diagnosis.

Discussion

Vertigo symptoms are typically induced by rapid changes in head position and may be accompanied by nausea, vomiting, perspiration, and difficulty with ambulation. These are all complaints commonly seen by chiropractors. Patients placed on a prescription of fluoroquinolones will also be commonly encountered by chiropractors. Sampling from one emergency department reports that 25% of all patients receiving antibiotics were placed on fluoroquinolones.11 Overall, 23.1 million unique patients received prescriptions for oral fluoroquinolones and another 3.8 million received injectable forms in 2011 alone.12

There is an established understanding that fluoroquinolones are linked to adverse events of the central nervous system.13 The mechanism of neurotoxicity is thought to be from inhibition of y-aminobutyric acid receptors.14 It is only just emerging that peripheral neuropathies are also associated with fluoroquinolone usage. A pharmacoepidemiologic study analyzing fluoroquinolone use and the risk of developing peripheral neuropathy found that there is a 30% increase in developing peripheral neuropathy.14 Management of fluoroquinolone-induced neuropathy can be difficult and prognoses differ based on length of use and complicating factors.

This case report is describing the potential association of a patient with vertigo secondary to fluoroquinolone cranial nerve VIII neuropathy. Chiropractors treating patients with vertigo-like conditions can identify those patients who are also on fluoroquinolones while taking their history. Once diagnosed, the patient should receive immediate referral back to the prescribing physician. While one study suggests that 71% of patients were asymptomatic within two weeks of discontinuing fluoroquinolones,13 some accounts last up to a year or even permanently.13 The patient being discussed in this case report unfortunately suffered permanent damage to his cranial nerve VIII.

Limitations

As this is a case study, the cause and effect cannot be definitively established. It is possible that this patient may have simply developed vertigo with or without fluoroquinolone usage. It is also a possibility that the vertigo may be linked to the migraines, as they can be a cause of dizziness with recurrent spontaneous attacks.2 Advanced studies could have been performed on this patient including auditory evoked potentials to assess the functioning of the vestibular nerve and its end organs which could have yielded valuable clinical information.15 This patient was advised to have this test done but declined, and elected not to pursue the referral to a specialty neurology center at a university medical school.

Conclusions

Given the frequency of patients with vertigo, chiropractors should determine in their evaluations if they are also taking fluoroquinolone antibiotics. In this particular case it was thought that his vertigo was a side effect of this medication. Although no true conclusion can be drawn linking fluoroquinolones to his vertigo, it should be considered as a possible differential diagnosis.

References