

Levofloxacin induced Focal Seizure: An area of Concern

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ABSTRACT

Focal seizure is a very rare side effect of Levofloxacin. According to Infectious Disease Society of America (IDSA) Levofloxacin is a first line treatment of Pneumonia, Urinary tract infections and abdominal infections. Here in we report a case of 65-year-old male presenting to Emergency Medicine Department with chief complain of fever with chills associated with rigors. Patient was a known case of Parkinson's disease (PD). After admission he was treated with Levofloxacin and after the fifth dose of Levofloxacin patient had an attack of Focal seizure on his right hand. Focal seizure can emerge as a rare but dangerous side effect of Levofloxacin.

Key words: Fluroquinolones–Focal seizure–Levofloxacin–Parkinson's disease

1 INTRODUCTION

Levofloxacin is one of the newer fluoroquinolones which has been prescribed for various types of infections as its tolerance profile is good compared to others. One study suggest Levofloxacin to be one of the safest fluoroquinolones as it has less side effects. [1] American Thoracic Society recommends levofloxacin and other respiratory fluoroquinolones as first line treatment for community acquired pneumonia when comorbidities such as heart, lung, or liver disease are present or when in-patient treatment is required. [2] Levofloxacin also plays a major role in recommended treatment regimens for ventilator-associated and healthcare-associated pneumonia. [3]

A wide variety of other uncommon but serious adverse events have been associated with fluoroquinolone use, with varying degrees of evidence supporting causation. These include anaphylaxis, hepatotoxicity, central nervous system effects including seizures and psychiatric effects.

2 CASE DETAILS

Here in we report a case of Focal seizure of a 65 years old diabetic and hypertensive male presenting to Emergency Medicine Department with Chief complains of Fever with Chills associated with Rigor and altered sensorium. He was a known case of PD since 3 years. He also had Diabetes, Hypertension and Hypothyroidism since last 5-6 years and was on medication for these conditions. He was also taking Duloxetine 20mg and levodopa (100mg) + Carbidopa (25mg) combination for PD. Patient was able to walk with support. He had difficulty in standing from sitting and same way sitting from standing. There was history of occasional dyspnea even at rest.

After admission he was treated with Levofloxacin 500 mg iv BD, Colistin on nebulizer, Ipratropium + Salbutamol on nebulizer 12 hourly. Other medications for associated conditions were continued at their usual doses. These were Levodopa (100mg) + Carbidopa (25mg) for PD, Tab. Thyroxine for hypothyroidism, Tab. Amlodipine (5mg) + Atenolol (50mg) for hypertension. These medications were given by Ryle's tube. On the third day of admission Patient was diagnosed with Focal seizures on his Right hand after receiving the fifth dose of Levofloxacin. In CT scan of Brain there was no midline shift, no evidence of subdural, extradural or intraparenchymal hemorrhage seen. On blood reports patient's sodium level was 132mmol/L. After that

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Levofloxacin was discontinued and replaced with Ceftriaxone 1000mg iv and there were no further seizures which were observed.

This case was reported via Vigiflow at WHO-UMC ADR unique ID- IN-IPC-300435727 as a Levofloxacin induced Focal Seizure.

3 DISCUSSION

A seizure is a symptom that refers to episodic, excessive and disorderly neuronal activity in the brain. Drug induced Seizures (DIS) are very common complications. Seizures occur generally as a result of inadequate inhibitory influences (e.g., gamma aminobutyric acid) or excessive excitatory stimulation (e.g. glutamate) although many other neurotransmitters play a role. The specific drugs associated with DIS may vary by worldwide and change over time, common reported causes include antidepressants like Bupropion, Mianserin, antihistamines like Chlorpheniramine, Pyrilamine, antibiotics like Penicillin, Ciprofloxacin etc. [4] Focal motor seizures are more common on the face, hands, and toes because these areas have disproportionately large cortical representation. [5]

The epileptogenic nature of fever is well recognized. Although in the above case it does not appear to be a determinant factor considering this patient had body temperatures of up to 38.9°C without associated convulsion prior to initiating levofloxacin. As Levofloxacin can cross Blood Brain Barrier the seizures produced by it are mainly due to antagonism of the inhibitory effect of gamma-aminobutyric acid (GABA) or to its capacity to activate the N methyl-D-aspartate (NMDA) receptors. [6, 7] Patient's Brain CT scan report and sodium level (132mmol/L) were both within normal limits, this rules out the occurrence of hyponatremia associated Seizures. Patient was also taking levodopa + carbidopa but no interactions have been reported between these drugs and Levofloxacin. The patient was on duloxetine for diabetic neuropathy. There are seizures due to abrupt withdrawal of Duloxetine but no known association with continuation of this drug. [8] Therefore, the role of hyponatremia, body temperature and other drugs apart from Levofloxacin producing seizures in this patient cannot be established.

4 CONCLUSION

Levofloxacin is one of the culprit drugs in DIS, which can negatively impact the morbidity of patients. Hence physician should be watchful to prescribe this drug and also be observant of any Drug-Drug Interaction between prescription drugs which can accentuate the occurrence. Further vigilance is needed if the patient is elderly as in the above case. So, before initiation of Levofloxacin it is important to take into account the risk of neurotoxicity especially in the elderly and in patients with a past neurological history.

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