Available online at www.sciencedirect.com

SciVerse ScienceDirect

journal homepage: www.elsevier.com/locate/mjafi

Case Report

Levofloxacin induced delirium with psychotic features in a young patient

Lt Col Vikas Raj^{a,*}, Brig T.V.S.P. Murthy^b^aClassified Specialist (Medicine), MH Gwalior, Gwalior 474006, India^bCommandant, MH Gwalior, Gwalior 474006, India

ARTICLE INFO

Article history:

Received 1 July 2012

Accepted 11 October 2012

Available online 29 December 2012

Keywords:

Levofloxacin

Fluoroquinolones

Delirium

Introduction

Fluoroquinolones are an under-recognized cause of changes in mental status. The new quinolone derivatives (levofloxacin, gatifloxacin, moxifloxacin and sparfloxacin), also known as gyrase inhibitors, have been implicated for causing central nervous system adverse effects. Delirium and hallucinations associated with fluoroquinolones have been reported, particularly with ciprofloxacin.

Most case reports of this nature have generally been seen in adults or in the geriatric age group, and rarely seen in the pediatric age group, especially with levofloxacin. We report here a case of a young patient who presented with acute onset neuropsychiatric manifestations after levofloxacin ingestion when she was being managed for an acute respiratory infection.

Case report

A 13-year old female patient with no previous history of any co-morbidities or neurological illness presented with history

of low to moderate grade fever, body aches and cough with scanty mucoid expectoration of 2 days duration. Clinically the patient was febrile, haemodynamically stable and diagnosed to have features of acute bronchitis. Routine hematological investigations and X-ray chest were essentially normal. She was started on oral levofloxacin 500 mg/day with supportive care in the form of antipyretics and antitussives. After 2 h of starting therapy patient developed acute onset giddiness along with non-projectile vomitus. She became restless with irrelevant speech and complained of tremulousness and a vibration like sensation in her body. She had difficulty in moving her limbs with poor response to painful stimuli. She was confused, disoriented with features of delirium. There was no evidence of meningeal irritation and pupillary examination was essentially normal. Her plantars were equivocal and sensory examination could be carried as the patient was un-cooperative. Other conditions like hypoglycemia, dyselektroemia, ketosis, were ruled out as the electrolytes and blood glucose levels were within normal limits. Cerebral malaria and meningitis were ruled out by doing a peripheral blood smear and a lumbar puncture. An urgent MRI was done which was within normal limits. An EEG was done which showed no evidence of any epileptiform discharges. Levofloxacin was discontinued and was empirically managed with broad-spectrum antibiotics and antimalarials. On day 2 of admission patient was more cooperative but however continued to be drowsy. By day 3 she was accepting orally and was ambulant with support and gradually recovered by day 4 of hospitalization. Having ruled out all other etiologies with relevant tests and neurological examination a diagnosis of levofloxacin induced neurotoxicity was made. She was subsequently discharged on day 6 of with no evidence of any

* Corresponding author. +91 8435368941 (mobile).

E-mail address: vikasraj71@gmail.com (V. Raj).

0377-1237/\$ – see front matter © 2012, Armed Forces Medical Services (AFMS). All rights reserved.

<http://dx.doi.org/10.1016/j.mjafi.2012.10.001>

neurological deficit. She is under follow up and has remained asymptomatic thereafter.

Discussion

Drug induced delirium is a well known entity with sedatives, narcotics and anticholinergics are most often implicated in its causation.¹ Antibiotic induced neuropsychiatric manifestations are a well reported entity, especially where cephalosporins and macrolides are implicated in the majority of cases.² Delirium associated with fluoroquinolones is rare and very few cases are reported in medical literature.³ Amongst the quinolones ciprofloxacin, pefloxacin and ofloxacin are more commonly described to have neuropsychiatric manifestations than levofloxacin, of which there is hardly any mention in literature.⁴ The tolerance profile of levofloxacin can be considered good if not better than most of the other fluoroquinolones.⁵ The major reported side effects are gastrointestinal (3–17%) and CNS related (0.9–11%) disturbances. The CNS related side effects of levofloxacin are headache, dizziness, tremors, insomnia, hallucinations, convulsions and anxiety. According to the European dossier data, from 5388 patients treated with levofloxacin, 12% developed an adverse effect, possibly related to the drug and only 1% was classified as serious. Treatment with levofloxacin was discontinued in only 4%.⁶ Most cases reported have been seen in elderly individuals. There have been no documented cases in literature where levofloxacin induced neurological manifestations have been seen in such a young age as in our case.

The development of these effects seems to be related to the degree to which the fluoroquinolones bind to GABA receptors and their differing potential to act as GABA antagonist and bind to the N-methyl-D-aspartate receptor.⁷ There are several predisposing factors for delirium including elderly age, male gender, diabetes mellitus, hypoxemia, any neurological illness or severe atherosclerosis. Moorthy et al have described features of acute onset psychosis in an elderly male patient with uncontrolled diabetes and hypertension which recovered spontaneously on withdrawing the drug.⁸ Our patient did not have any of these predisposing features.

Fluoroquinolones may lower the seizure threshold by binding competitively to the GABA-A receptor. Non-convulsive status epilepticus (NCSE) is an epileptic condition often under-diagnosed, clinically manifested by an altered mental state, and associated with continuous epileptic form discharge on EEG. Issacson et al have described quinolone induced complex partial seizures which manifested as acute

confusional state.⁹ Since the EEG in our case did not show any features of NCSE, this possible side effect of levofloxacin was excluded.

Before initiating fluoroquinolones, it is important to take into account the risk of neurotoxicity especially in the elderly and with patients with a past neurological history.¹⁰ Here we report a case of levofloxacin induced delirium with psychotic features in a previously healthy 13-year old female patient. Neurological side effects with quinolones have generally been seen in the elderly or in patients with some predisposing illness. Hence it is important that practitioners be aware that this potential adverse effect can be seen in the younger age group or a pediatric age group. Although rare physicians should be aware, and not throw caution to the wind while using levofloxacin as an antimicrobial agent.

Conflicts of interest

All authors have none to declare.

REFERENCES

1. Alagiakrishnan K, Wiens CA. An approach to drug induced delirium in the elderly. *Postgrad Med J*. 2004;80:388–393.
2. Vicente de Vera C, Garcia M, Piffare Teixido R, Barbe F. Delirium induced by clarithromycin in a patient with community acquired pneumonia. *Eur Respir J*. 2006;28:671–672.
3. Hakko E, Mete B, Ozaras R, Tabak F, Ozturk R, Mert A. Levofloxacin-induced delirium. *Clin Neurol Neurosurg*. 2005;107:158–159.
4. Tome AM, Filipe A. Quinolones: review of psychiatric and neurological adverse reactions. *Drug Saf*. 2011;34(6):465–488.
5. Carbon C. Comparison of levofloxacin versus other fluoroquinolones. *Chemotherapy*. 2001;47:9–14.
6. Kiangkitiwan B, Doppalapudi A, Fonder M, Solberg K, Bhner B. Levofloxacin induced delirium with psychotic features. *Gen Hosp Psychiatry*. 2008;30:381–383.
7. Slobodin G, Elias N, Zaygraikin N, Sheikh-Ahmad M, Odeh M. Levofloxacin induced delirium. *Neurol Sci*. 2009;30:159–161.
8. Moorthy N, Raghavendra N, Venkatarathnamma PN. Levofloxacin induce acute psychosis. *Indian J Psychiatry*. 2008;50:57–58.
9. Issacson SH, Carr J, Rowan AJ. Ciprofloxacin induced complex partial status epilepticus manifesting as an acute confusional state. *Neurology*. 1993;43:1619–1620.
10. Moschini J. Acute confusional syndrome secondary to toxicity of levofloxacin. *Neurol Arg*. 2011;3(4):234–236.