

Case Report

Massive Citalopram Overdose Associated with Recurrent Seizures and Bilateral Shoulder Dislocations

Shafeajafar Zoofaghari¹, Anselm Wong^{2,3,4}, Pegah Kiarasi⁵, Farzad Gheshlaghi¹

¹Department of Clinical Toxicology, Isfahan Clinical Toxicology Research Center, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

²Emergency Department, Austin Toxicology Unit, Victorian Poisons Information Centre, Austin Health, Victoria, Australia

³Department of Medicine, School of Clinical Sciences at Monash Health, Monash University, Melbourne, Victoria, Australia

⁴Department of Medicine and Radiology, Centre for Integrated Critical Care, Melbourne Medical School, University of Melbourne, Melbourne, Victoria, Australia

⁵Department of Clinical Toxicology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

Received: 27-04-2020.

Accepted: 18-06-2020.

Published: 08-10-2020.

ABSTRACT

Selective serotonin reuptake inhibitors (SSRIs) are widely used in the treatment of many types of mental disorders. Citalopram is commonly used as a new generation of SSRIs in this regard; however, unfortunately, its overdose is associated with seizure and heart disorders. The reported case in the present study indicated recurrent seizures, nonspecific ST-T changes, and prolonged QT interval due to the overuse of citalopram. The patient had bilateral anterior shoulder dislocation along with right proximal humerus fracture that was occurred during the seizure. The dislocation was initially reduced and then fixed. Moreover, the seizure was controlled with diazepam without any problems, and cardiac monitoring continued for 2 days. Massive citalopram overdose may be associated with recurrent seizures and QT prolongation. Complications postseizures, such as shoulder dislocations, should be examined for and managed appropriately.

KEYWORDS: Citalopram, seizure, shoulder dislocation

INTRODUCTION

Citalopram is a selective serotonin reuptake inhibitor (SSRI) that has comparable or greater efficacy than other SSRIs and tricyclic antidepressants (TCAs).^[1] Citalopram acts by inhibiting the neuronal reabsorption of serotonin with minimal effect on norepinephrine and dopamine. The usual dose of citalopram is 20–40 mg daily. Overdose of the mentioned drug is associated with symptoms and signs such as dizziness, sweating, nausea,

vomiting, tremor, drowsiness, and sinus tachycardia.^[2] In previous studies, a generalized seizure was reported in 2%–6% of patients who referred to the hospital following the overdose of citalopram.^[3,4] The onset of seizures may occur within an hour after overdosing or may be

Address for correspondence:

Prof. Farzad Gheshlaghi, E-mail: gheshlaghi@med.mui.ac.ir

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Zoofaghari S, Wong A, Kiarasi P, Gheshlaghi F. Massive citalopram overdose associated with recurrent seizures and bilateral shoulder dislocations. *J Res Pharm Pract* 2020;9:161-4.

| Access this article online | |
|---|---|
| Quick Response Code:  | Website: www.jrpp.net |
| | DOI: 10.4103/jrpp.JRPP_20_24 |

delayed up to 13 h later.^[5,6] The mechanism of seizure following citalopram poisoning is unclear; however, a surge increase in cerebral serotonin concentration may be directly responsible in this regard.^[3] We describe a case of recurrent seizures following citalopram overdose complicated by bilateral shoulder dislocations and fractures.

CASE REPORT

A 33-year-old male patient presented with a chief complaint of drowsiness referred to the poisoning department of Khorshid Hospital, Isfahan, Iran. He had a history of taking 40 tablets of citalopram (40 mg) an hour before admission to the hospital with the intention of committed suicide. On arrival, he was conscious with a blood pressure of 100 / 70 mmHg, respiratory rate 18/min, heart rate 86 bpm, SpO₂ 99% on room air, and temperature 37°C. Other laboratory data (after seizure) are presented in Table 1.

Shortly after admission, he developed a generalized tonic-clonic seizure that lasted 2 min and resolved without treatment. Nonspecific ST-T changes and prolonged QT interval were observed in the electrocardiogram strip recorded.

After becoming conscious, the nasogastric tube was inserted, and gastric lavage and charcoal therapy were performed. The clinical examination revealed that the

right shoulder was dislocated. Portable X-ray were taken, and bilateral anterior shoulder dislocation along with right proximal humerus fracture was confirmed [Figure 1a].

One hour later, the patient again had a second tonic-clonic seizure that was controlled with diazepam. The patient was sedated and intubated because of decreased level of consciousness, risk of aspiration, and decreased O₂ saturation. The patient was transferred to the intensive care unit and underwent mechanical ventilation. Brain computed tomography (CT) scan was done for rule out of central nervous system problem then under sedation, right shoulder dislocation was reduced [Figure 1b].

The brain CT scan was normal. The patient was discharged with full recovery after 2 days and referred to the orthopedic and psychiatric departments for follow-up [Figure 2].

DISCUSSION

In previous studies, seizures were reported in 6% of patients following the overdose of citalopram,^[3,4] but recurrent seizures were very rarely reported. The onset of seizures may occur within an hour after overdosing or may be delayed up to 13 h later.^[5] The mechanism of seizure following citalopram poisoning is uncertain. However, a rush in cerebral serotonin concentration may be directly responsible in this regard.^[3] The recurrence of seizures may be dose related.

QT prolongation, which may predispose to Torsades de pointes (TdP), can also occur with citalopram overdose. Previous studies suggest that the administration of activated charcoal might help decrease the risk of QT prolongation and subsequent TdP.^[5] The proportion of those at risk of TdP (using the QT nomogram) who received activated charcoal was half that of those who did not receive activated charcoal, presumably because of decreased citalopram absorption. Therefore, early activated charcoal may also be useful at decreasing the risk of seizures. However, in our case, a seizure had already occurred, which could reflect the ongoing absorption of the massive citalopram ingestion.

Monitoring should occur for at least 13 h postoverdose for the risk of developing QT prolongation and seizures.

SSRIs are generally safer than older antidepressants, such as TCAs and monoamine oxidase inhibitors. In addition to the low toxicity of SSRIs, their effectiveness in the treatment of many mental disorders has led to their widespread use.^[7] However, an overdose of the SSRIs, including citalopram, may be associated with complications such as tachycardia, drowsiness, tremor, nausea, and vomiting.^[8]

Table 1: Patient's laboratory data at the time of admission to the toxicological emergencies department

| Test name | Value | Test name | Value |
|-------------------------------|-------|---------------------------------------|-------|
| Hematology | | Biochemistry | |
| WBC, 10 ³ /μL | 11.2 | BUN, mg/dL | 10.7 |
| RBC, 10 ⁶ /μL | 5.36 | Creatinine, mg/dL | 1.41 |
| Hemoglobin, g/dL | 16.5 | AST, IU/L | 29 |
| Hematocrit, % | 49.5 | ALT, IU/L | 31 |
| Platelet, 10 ³ /μL | 298 | ALP, IU/L | 282 |
| RDW, % | 13.1 | Sodium Na ⁺ , mEq/L | 146 |
| MCV, fL | 92.4 | Potassium, K ⁺ , mEq/L | 3.8 |
| MCH, pg | 30.8 | Blood sugar, mg/dL | 175 |
| MCHC, g/dL | 33.3 | Venous blood gas | |
| Coagulation tests | | pH | 7.04 |
| PTT, s | 64 | PCO ₂ , mmHg | 69.7 |
| PT, s | 11.6 | PO ₂ , mmHg | 38.3 |
| PT control, s | 11.5 | HCO ₃ ⁻ , mEq/L | 15.9 |
| INR | 1.06 | Base excess, mmol/L | -13.1 |
| | | O ₂ saturation, % | 49.7 |

WBC=White blood cell, RBC=Red blood cell, RDW=Red cell distribution width, MCV=Mean corpuscular volume, MCH=Mean corpuscular hemoglobin, MCHC=MCH concentration, PTT=Partial thromboplastin time, PT=Prothrombin time, INR=International normalized ratio, BUN=Blood urea nitrogen, AST=Aspartate aminotransferase, ALT=Alanine aminotransferase, ALP=Alkaline phosphatase test

Cardiac toxicity and seizure were reported as the rare complications of citalopram overdose. Our case had a recurrent seizure, with nonspecific ST-T changes and prolonged QT interval. The patient reported in Cuenca *et al.*'s study presented with seizure and episode of supraventricular tachycardia following the overdose of citalopram.^[5] In 6 cases of fatal citalopram overdose cardiac dysrhythmia or seizure suggested as probable

causes of death.^[9] In another study, citalopram overdose led to the generalized seizure and cardiac disorder in six patients. Some of the cardiac disorders included prolonged QT interval, transient sinus tachycardia, and inferolateral ST-T changes.^[8]

Cuenca *et al.* stated that seizure incidents increase the need for invasive ventilatory support, secondary trauma, and increase hospital stay.^[5] For these complications, patients with citalopram overdose must be observed at least 24 h postingestion.

CONCLUSION

Massive citalopram overdose may be complicated with recurrent seizures and QT prolongation. Complications postseizure consequences, such as shoulder dislocations, should be assessed and managed appropriately. Early administration of activated charcoal should be considered to decrease the risk of toxicity.

Declaration of patient consent

The authors certify that they have obtained appropriate patient consent forms. In the form, the patient has given his consent for his clinical information to be reported.

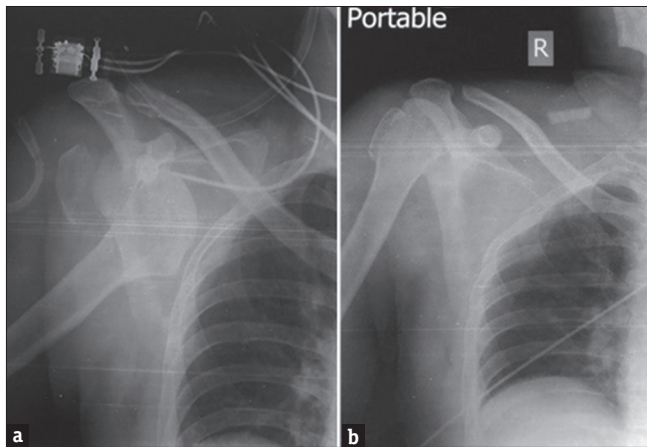


Figure 1: Right proximal humerus fracture dislocation before (a) and after (b) reduction

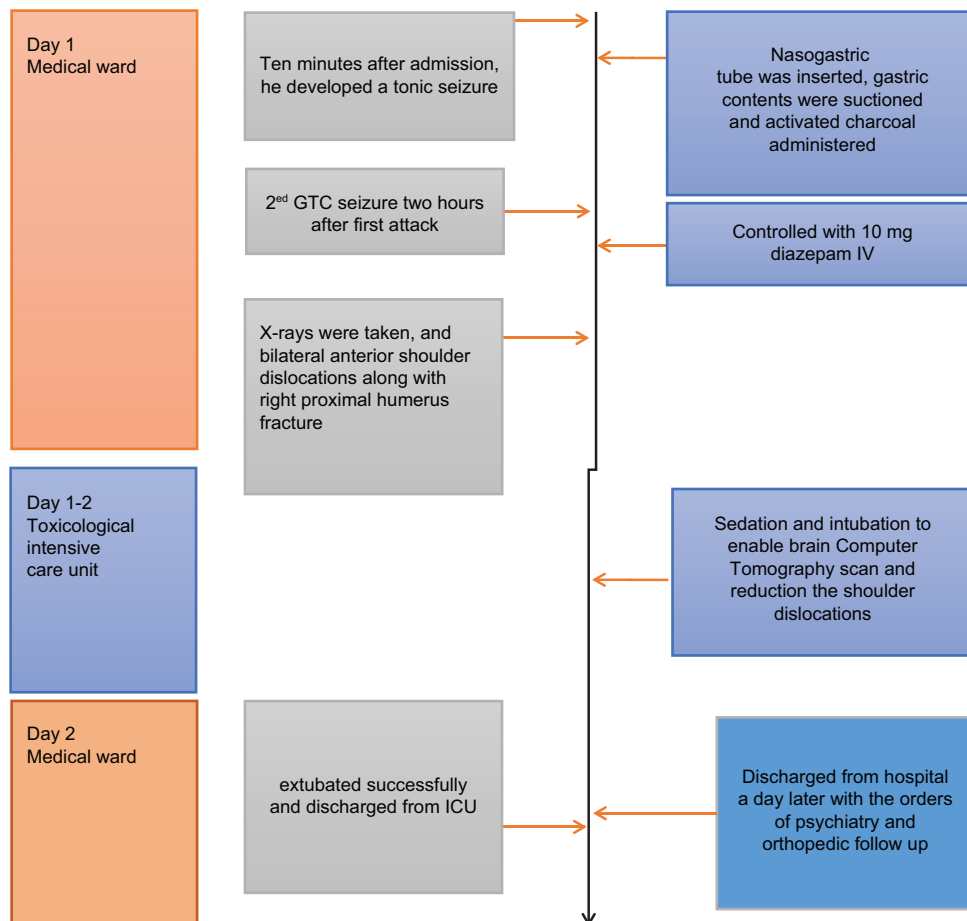


Figure 2: Timeline of the patient's medical status after admission to the toxicological emergencies department

He understood that his name would not be published, and outstanding efforts will be made to conceal his identity.

AUTHORS' CONTRIBUTION

Shafeajafar Zoofaghari and Farzad Gheshlaghi contributed to the idea and design of the study. Shafeajafar Zoofaghari and Pegah Kiarasi gathered the data. Shafeajafar Zoofaghari, Farzad Gheshlaghi and Anselm Wong drafted the manuscript, and all authors critically revised it for relevant intellectual content and approved the final version.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Waring WS, Gray JA, Graham A. Predictive factors for generalized seizures after deliberate citalopram overdose. *Br J Clin Pharmacol* 2008;66:861-5.
2. Nemeroff CB. Overview of the safety of citalopram. *Psychopharmacol Bull* 2003;37:96-121.
3. Isbister GK, Bowe SJ, Dawson A, Whyte IM. Relative toxicity of selective serotonin reuptake inhibitors (SSRIs) in overdose. *J Toxicol Clin Toxicol* 2004;42:277-85.
4. Kelly CA, Dhaun N, Laing WJ, Strachan FE, Good AM, Bateman DN. Comparative toxicity of citalopram and the newer antidepressants after overdose. *J Toxicol Clin Toxicol* 2004;42:67-71.
5. Cuenca PJ, Holt KR, Hoeffle JD. Seizure secondary to citalopram overdose. *J Emerg Med* 2004;26:177-81.
6. Masullo LN, Miller MA, Baker SD, Bose S, Levsky M. Clinical course and toxicokinetic data following isolated citalopram overdose in an infant. *Clin Toxicol (Phila)* 2006;44:165-8.
7. Godlewska BR, Norbury R, Selvaraj S, Cowen PJ, Harmer CJ. Short-term SSRI treatment normalises amygdala hyperactivity in depressed patients. *Psychol Med* 2012;42:2609-17.
8. Personne M, Sjöberg G, Persson H. Citalopram overdose – Review of cases treated in Swedish hospitals. *J Toxicol Clin Toxicol* 1997;35:237-40.
9. Oström M, Eriksson A, Thorson J, Spigset O. Fatal overdose with citalopram. *Lancet (London, England)* 1996;348:339.