

Ventricular Fibrillation Caused by Mianserin Poisoning

Takeshi Kitamoto^{1*}, Kouichi Hayakawa², Fukuki Saito² and Yasushi Nakamori²

¹Emergency Medical centre and Poison centre, Saitama Medical University Hospital, Moroyama, Saitama, Japan

²Department of Emergency medicine, Kansai Medical University, Moriguchi-city, Osaka, Japan

*Corresponding author: Takeshi Kitamoto, Emergency Medical centre and Poison centre, Saitama Medical University Hospital, Moroyama, Saitama, Japan, Tel: 049-276-1111; E-mail: kitamott@saitama-med.ac.jp

Received date: April 10, 2017, Accepted date: April 17, 2017, Published date: April 25, 2017

Copyright: © 2017 Kitamoto T, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

Case: A 56-year-old man who revived after ventricular fibrillation was transferred to the emergency center at Kansai Medical University. The blood examination, computed tomography, and cardiac echocardiography at the time admission could not detect the cause of ventricular fibrillation. However, high-performance liquid chromatography revealed mianserin and aripiprazole in his serum. The concentration of mianserin (48.7 mg/L), especially, was found to be very high. Therefore, we believed that ingestion of a large amount of mianserin could have induced ventricular fibrillation.

Keywords: Mianserin; Lethal poisoning; Antidepressant; Ventricular fibrillation

Introduction

Mianserin is a tetracyclic antidepressant used to treat depression and sleep disturbances [1]. Cardiac complications are common in tricyclic antidepressant poisoning, but are rare with overdose of mianserin [2]. Moreover, it is reported that mianserin poisoning rarely induces abnormal electrocardiogram or fatal cardiac arrhythmia [2-4]. Here, we report a case in which the patient revived after ventricular fibrillation following mianserin overdose.

Case Report

A 56-year-old man with hypertension and depression regularly consumed mianserin 10 mg, aripiprazole 3 mg, etizolam 1 mg, fluvoxamine 150 mg, amrjipin 2.5 mg, and imidapril 5 mg per day, but had no history of cardiac arrhythmia. However, he was found unconscious, and when the paramedics arrived, the electrocardiographic monitor indicated ventricular fibrillation. Defibrillation was conducted twice, following which cardiopulmonary resuscitation was initiated. He revived soon after and was transferred to the emergency center at Kansai Medical University. At the time of admission, he had slipped into coma and had a pulse rate of 89 beats per min, a blood pressure of 90/52 mmHg, and body temperature of 35.8°C. The electrocardiogram indicated normal sinus rhythm. The blood examination, computed tomography, and cardiac echocardiography showed no abnormal findings, except for elevation of white blood cell count (13100/ μ L) and slight brain edema by hypoxemia. Benzodiazepine, barbiturate, and tricyclic antidepressant could not be detected by Triage DOA[®] (Sysmex Corporation, Kobe) in carrying out simple drug screening from a small amount of urine sample.

He received hypothermia therapy for two days, but the electroencephalography still showed a flat line on hospital Day 4. Next, we analyzed his serum using high-performance liquid chromatography to exclude drug poisoning because of his history. This revealed the

plasma concentrations of mianserin (48.7 mg/L) and aripiprazole (0.29 mg/L). No other common drugs were detected. On hospital Day 6, the plasma mianserin concentration declined by 0.91 mg/L. No ventricular fibrillation was observed at the time of his admission. However, he did not recover his senses; therefore, we performed tracheotomy on hospital Day 6, and transferred him to another hospital on hospital Day 48.

Discussion

Mianserin is a tetracyclic antidepressant, which blocks presynaptic alpha-2-receptors in the brain, resulting in higher levels of noradrenalin in the synaptic cleft, in combination with antihistaminic properties and is used to treat depression and sleep disturbances [1]. Unlike tricyclic products mianserin lacks cardiotoxicity resulting in a superior safety also in over dosage [4,5]. Ohberg reported that fatality risks for SSRIs, moclobemide or mianserin were significantly lower than those for tricyclic antidepressants [6]. However, despite being rare, few cases of serious poisoning symptoms such as complete heart block [2], bradycardia, hypotension [3], and ventricular fibrillation [7] due to mianserin intoxication have been reported.

In the present case, the cause of the ventricular fibrillation could not be detected at first. Analysis of the patient's blood to exclude drug poisoning because of his history of depression and suicidal attempt revealed high levels of mianserin and aripiprazole in blood (48.7 mg/L and 0.29 mg/L, respectively) at the time of admission. The concentration of mianserin, especially, was found to be much higher than those the upper therapeutic limit of effective mianserin concentration (about 0.07 mg/L) [8] and in cases reported so far [2]. Owing to the absence of other causes, we believe that mianserin induced ventricular fibrillation in this patient.

Disclosure

We declare that there are no companies in the COI relations to be disclosed. Informed consent was obtained from the patient's family for publication of this case report. We did not go for the research involving human participants and animals.

References

1. Haine SE, Miljoen HP, Blankoff I (2006) Mianserin and ventricular tachycardia: Case report and review of the literature. *Cardiology* 106: 195-198.
2. Hla KK, Boyd O (1987) Mianserin and complete heart block. *Human Toxicol* 6: 401-402.
3. Koseoglu Z, Kara B, Satar S (2010) Bradycardia and hypotension in mianserin intoxication. *Hum Exp Toxicol* 29: 887-888.
4. Green SD, Kendall TP (1977) Heart block in Mianserin hydrochloride overdose. *Br Med J* 2: 1190.
5. De Ridder JJ (1982) Mianserin: result of a decade of antidepressant research. *Pharm Weekbl Sci* 22: 139-45.
6. Ohberg A, Vuori E, Klaukka T (1998) Antidepressants and suicide mortality. *J affect disord* 50: 225-233.
7. Haefeli WE, Schenenberger RA, Scholer A (1991) Recurrent ventricular fibrillation in mianserin intoxication. *BMJ* 302: 415-416.
8. Montgomery S, McCauley R, Montgomery DB (1978) Relationship between mianserin plasma levels and antidepressant effect in a double-blind trial comparing a single night-time and divided daily dose regimens. *Br J Clin Pharmacol* 5: 71-76.