

CASE REPORT**A Case Report of Lorazepam Overdose Induced Diplopia**

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Abstract

Diplopia is a visual disturbance with perception of two images of a single object with various types of aetiologies. Here, we intend to highlight an uncommon side effect of lorazepam induced diplopia following an overdose. The diplopia resolved spontaneously without any neurological or physical deficit in the absence of any intervention. In conclusion, the exact mechanism of diplopia induced by lorazepam is unknown. More research in future could be done to determine the causal relationship between benzodiazepine and visual disturbances.

Keywords: Lorazepam, Diplopia, Side Effect

Introduction

Diplopia, or seeing double, is a visual disturbance with the perception of two images of a single object [1]. It can be further classified into binocular (89%) and monocular [1]. Binocular diplopia is characterized by double vision which disappear when one eye is closed. It is caused by a misalignment of the visual axes [1,2]. Monocular diplopia, however, is the condition whereby the double vision persists despite one eye being closed. The aetiology of diplopia could be attributed to the mechanical restriction of ocular movement, and could also be of peripheral or central neurogenic origin [3]. Besides, diplopia also could be one of the side effects of medications, commonly known as ‘drug-induced’.

Here, we report a case of diplopia secondary to lorazepam overdose.

Case Report

Ms CM is a 19-year-old college student lady who was referred to the Psychiatry team for overdose of her medicine. She has been diagnosed with major depressive disorder since six months ago and has been prescribed with tablet sertraline 100mg ON and tablet lorazepam 1mg PRN.

Prior to the incident, she had complained of a deterioration of her depressive symptoms, which included the worsening of her mood, insomnia, the feeling of worthlessness, anhedonia and subsequently developed suicidal ideation due to overwhelming stress.

Following that, she ingested 12 tablets of lorazepam 1mg (8 tablets at 10 am in the morning and again took 4 tablets at 12 noon on the same day). She took those tablets with the intention to die. She did not consume sertraline on that day. After consuming the medications, she experienced nausea and vomiting. About eight hours after ingestion of the medications, she developed double vision causing her to ambulate unsteadily. She fainted and was eventually found unconscious by her housemate who brought her to the hospital.

Upon arrival at the hospital, she regained consciousness. Besides light headedness, she had binocular diplopia which worsened when she looked outwards. This is her first time experiencing diplopia, and there were no significant eye problems or neurological problems in the past. Full neurological examinations were performed on her and was unremarkable. She was also remorseful of her actions. In view of the lorazepam overdose, she was admitted under the medical team for further management.

The diplopia gradually resolved within 24 hours without persistent neurological symptoms and she was subsequently discharged from ward. She was given an appointment with the Psychiatry team to manage her depression.

Discussion

Benzodiazepines (BZDs) are generally used as anxiolytic agents, and also for their muscle relaxing, anti-epileptic, or hypnotic properties, in addition to intraoperatively as part of anesthesia [3]. It can be classified into long acting, intermediate acting, and short acting; lorazepam is categorized under intermediate acting group [4]. It can be administered via the oral or parenteral routes, either intravenously or

intramuscularly [4]. The daily recommended dose should not be more than 6 to 10mg [3, 5].

It is not uncommon to have BZDs prescriptions for a person who is under Psychiatric clinic follow up or is warded in a Psychiatric unit. In the United States of America, approximately 5.2% of the general population (age 18-80) have used BZDs. In fact, 31.4% of elderly population aged 65 and above have had long term BZDs prescriptions [6]! However, in comparison to young adults (15% in the age group between 18-35 years olds), the prescription of BZDs by psychiatrists to the elderly was 5.7%, which was relatively less [6].

BZD basically acts as a modulator on GABA-A receptor which produces sedative and calming effects [3]. The serum half-life of lorazepam ranges between 12 to 15 hours [5]. The most common side effects of lorazepam are sedation and fatigue [3]. Even though visual disturbance including diplopia and blurred vision are listed as part of its side effect profile, its exact frequency and dose of occurrence, as well as the risk factors and vulnerable populations are yet to be known so far [5]. In fact, diplopia is not commonly seen or mentioned in the literature.

There are several medications commonly used by psychiatrists with ocular side effects, particularly mood stabilizers such as carbamazepine and lamotrigine [7]. To the best of our knowledge, there is only one case report on lorazepam induced diplopia [8]. Lucca et al (2014) reported that the patient developed diplopia 9 hours intravenous lorazepam 4 mg was administered as stat dose. The symptom resolved spontaneously 12 hours after its onset. There is another case report on lorazepam induced accommodation paresis

[9] even though comprehensive study showed lorazepam affects oculomotor balance rather than visual acuity or accommodation [10]. The exact mechanism of diplopia caused by lorazepam is not known but it may be related to its ability to cause abnormal extraocular muscle movement [11].

There are also a few case reports of psychotropic drug induced diplopia, which occurred after a few months' commencement of citalopram and one week of sertraline [12, 13]. There is another case report mentioning that patient developed diplopia one week after taking aripiprazole [14]. Those psychotropic drugs were prescribed within therapeutic dosage [12, 13, 14]. It is proposed that the modification of intraocular pressure and ocular serotonergic inter neuronal fibers were part of the mechanism of selective serotonin reuptake inhibitor (SSRI) induced diplopia [12]. However, lorazepam has no such pharmacological properties that could contribute to the manifestation of diplopia. As the patient was prescribed with regular doses of sertraline, whether SSRI plays a role to enhance the manifestation of diplopia or not is not yet known.

It is also well known that BZDs are not advisable to be taken together with other CNS depressants such as antidepressants, narcotic analgesics, sedative antihistamines, anticonvulsants, anesthetics and alcohol which may worsen the patient condition [5]. However, in this case, the patient did not consume any alcohol, other illicit substance or any other prescribed medicine prior to the development of diplopia except for the consumption of overdose of lorazepam at one time. In addition, the patient did not have underlying ophthalmological or neurological problems prior to the onset of diplopia. With the resolution of diplopia

after 24 hours of ingestion, it is suggested that a possible temporal relationship between diplopia and lorazepam.

The exact frequency of occurrence of lorazepam induced diplopia is not known. However, patients and prescribers should be aware of the possible ocular side effects of lorazepam not only in overdosed cases but also those consumed within therapeutic doses. In regards to that, more research in future could be done to determine the causal relationship between benzodiazepine and visual disturbances.

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