



Acute olanzapine toxicity in a toddler

Abstract

Olanzapine is an antipsychotic medication, which is approved for treatment of psychiatric illnesses among various age groups of psychiatric patients. Accidental consumption of olanzapine is uncommon among the paediatric age group. We report a case of accidental consumption of 15 tablets of olanzapine (5 mg each) in a two-year-old boy. It is important that clinicians are made aware of these reports of an overdose of olanzapine.

Keywords: Antipsychotic. Accidental. Paediatric.

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INTRODUCTION

Olanzapine has been widely used as a second generation antipsychotic drug, in both adults and children. In adolescent patients, olanzapine has been US Food and Drug Administration (FDA)-approved for schizophrenia and bipolar I disorder (manic or mixed) as it shows a lower incidence of extrapyramidal adverse effect, but is known to cause metabolic abnormalities.[1] Despite olanzapine's widespread use, it is not FDA-approved for children below five years of age.[2] Here, we present a case of a two-year-old boy with accidental ingestion of approximately 75 mg of olanzapine tablets.

CASE SUMMARY

A two years and three months old boy who weighed 10 kg with no previous exposure to psychotropic medications was admitted to Ramaiah Memorial Hospital, Bangalore, India with alleged history of accidental consumption of 15 tablets of 5 mg olanzapine. At time of presentation, the child was drowsy and irritable with Glasgow Coma Scale score of 10/15 (E₂M₅V₃), power of 4/5, with normal deep tendon reflexes in all the four limbs, and his pupils were reacting to light. Later, the child developed miosis. His blood pressure dropped from 100/60 mm Hg to 84/42 mm Hg during two days of observation in paediatric intensive care unit. Other systemic examinations

including central nervous system were normal. Various investigations including complete haemogram, random blood sugar, liver function test, renal function test, electrocardiogram and 2D-ECHO, x-ray chest were normal. He was treated with a gastric lavage, administration of 10 g of activated charcoal, alkalinisation of urine and volume forced diuresis, and basic supportive care. Symptomatic treatment was given with inotropic drugs (norepinephrine as per child body weight), and the child recovered within four days and discharged.

DISCUSSION

Although the adverse effects and the toxicology data of olanzapine in adults are well-known, their overdosage information is scarce or limited in paediatric population. The present case reports an episode of accidental consumption of 15 tablets of 5 mg olanzapine by a two-year-old boy. The presentation of symptoms such as sedation, irritability, and fluctuation in blood pressure is consistent with previously reported overdose toxicity in toddlers (see Table 1).[3-5]

Olanzapine has a high affinity to various receptors such as dopamine D1-D4 receptors, 5-HT₂ receptor subtypes, 5-HT₆ receptor, acetylcholine muscarinic receptors, α -adrenergic, and histaminergic H₁ receptors. Sedation and hypotension can be explained by its action on various receptors. This child had consumed 75 mg olanzapine, which is the highest dose

Table 1: Summary of previously reported olanzapine overdosage cases in the paediatric population

Reference	Age (years)	Gender	Body weight	Approximate amount of olanzapine ingested	Reported serum olanzapine levels	Clinical presentation/treatment	Time of discharge/recovery
Lankheet <i>et al.</i> [3]	2	F	13 kg	30 mg	888 ng/mL (therapeutic level: 5-75 ng/mL)	Sleeping; did not open eyes on stimuli, tachycardia, hypertension (later hypotension), miosis with normal light reflexes. No decontamination.	36 hours
Tanoshima <i>et al.</i> [4]	1	F	12.8 kg	20-50 mg	137 ng/mL	Lethargy, somnolence, fever, jitters, ataxia, tremors. Activated charcoal and intubation.	7 days
Dokur <i>et al.</i> [5]	3	F	15 kg	20 mg	NA	Tachycardia, somnolence with insufficient cooperation, rapid atrial rhythm, hypotension, sinus rhythm, prolonged PR interval, supraventricular premature complexes, T-wave negativities in anterior deviations. Gastric lavage with activated charcoal, intravenous fluids and oxygen.	14 days
This report	2	M	10 kg	75 mg	NA	Somnolence, hypotension, tachycardia, miosis. Gastric lavage and activated charcoal.	4 days

F: Female, M: Male, NA: Not Applicable

reported in the literature.[3-5] It is important to monitor serum olanzapine level once child presents with such a high dose of olanzapine. Serum olanzapine level was not done as monitoring of serum olanzapine level is not available in Ramaiah Memorial Hospital. In spite of overdose, this child did not develop other toxic side effects such as arrhythmia, respiratory distress, dystonia, neuroleptic malignant syndrome, or hepatotoxicity. This could be explained by the timely intervention as the child was brought immediately for management.

Conclusion

Olanzapine overdosage among toddlers is an uncommon occurrence and scarcely reported in literature. To the best of our knowledge, this particular episode is the fifth reported in literature with the highest consumption dosage. It is important to spread awareness among clinicians on the risk of accidental ingestion of olanzapine in toddler.

REFERENCES

1. Singh LK, Praharaj SK, Sahu M. Nonfatal suicidal overdose of olanzapine in an adolescent. *Curr Drug Saf.* 2012;7:328-9.
2. Saljoughian M. Atypical antipsychotics: safety and use in pediatric patients. *US Pharm.* 2015;40:52-5.
3. Lankheet NA, Padberg RD, de Kluiver EM, Wilhelm AJ, van Woensel JB, Beijnen JH, *et al.* Relatively mild symptoms after an olanzapine intoxication in a 2-year-old girl with excessively high serum levels. *J Child Adolesc Psychopharmacol.* 2011;21:93-5.
4. Tanoshima R, Chandranipapongse W, Colantonio D, Stefan C, Nulman I. Acute olanzapine overdose in a toddler: a case report. *Ther Drug Monit.* 2013;35:557-9.
5. Dokur M, Gulmez GP, Kuzudisli SU. Clinical findings of emergence after olanzapine overdosage: pediatric case report and review of literature. *J Acad Emerg Med Case Rep.* 2014;5:100-6.

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