

# Tramadol suppository poisoning in children of Bangladesh

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## Abstract

**Background:** *Tramadol is an analgesic agent utilized in the treatment of different types of pain. Recently it was found that a few cases of tramadol poisoning were observed in hospitalized children. In all cases, it happened due to accidental administration of tramadol suppository.*

**Objective:** *The aim of this study was to determine the clinical manifestations of tramadol suppository poisoning in children and to create public awareness about the prevention of this suppository poisoning.*

**Materials & Methods:** *This was an observational, retrospective, single-center case-series study of hospitalized children in Dhaka Shishu Hospital during the periods of July 2016 to March 2017. Eleven patients with history of accidental intake of tramadol suppositories were enrolled in this study. Data regarding risk factors and clinical features were recorded and analyzed.*

**Results:** *In this study, 7/11(64%) cases were male and 4/11(36%) female. Mean age was 7.8 month and mean duration of hospital stay was 46.4 hours. Paracetamol in 2/11 (18%) cases and glycerin suppository in 9/11(82%) cases were main drugs that were supposed to be introduced instead of tramadol. Keeping drugs in same containers (11/11), similarities of suppository's size, shape and color (11/11) were found as causes of mistakes in this study. Main clinical features were drowsiness in 4/11(36%) cases, tachycardia in 3/11(27%) cases and one case died.*

**Conclusions:** *More cautiousness of parents, dissimilarity among different suppository in color size, shape and using of different containers of drugs may be the preventive way of this poisoning.*

**Key words-** *Tramadol poisoning, Tramadol suppository*

## Introduction

In last few years, tramadol, which is an analogue of codeine, has become popularity as an analgesic agent.<sup>1</sup> This drug is utilized in the treatment of different types of pain.<sup>2</sup> It's work on pain relief is by acting both as a central opiate agonist and central nervous system (CNS) reuptake inhibitor of norepinephrine and serotonin<sup>1,3,4</sup> Tramadol is

administered orally, rectally, sustained release, and in solution for IV/IM administration.<sup>5</sup> In paediatric age group, there is limited uses of tramadol. It is using at a dose of doses of 1-3 mg/kg/day every 4-6 h in children older than four years. But its safety in children younger than 12 years of age has not been confirmed.<sup>6-10</sup>

There is few literature on pediatric tramadol intoxication that occurred during its uses in therapeutic purpose.<sup>11-12</sup> Literature on non-therapeutic exposures is also less in pediatrics age group.<sup>5</sup> Recently a few cases of tramadol poisoning were observed in hospitalized children in Bangladesh. In all cases, it happened due to accidental administration of tramadol suppository per rectal instead of other drugs like paracetamol or glycerin suppository. Parents of all level of socioeconomic

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condition and educational qualification were found to do this mistake.

The clinical features of tramadol intoxication include CNS (central nervous system) and respiratory depression including apnea and serotonin syndrome. The serotonin syndrome causes altered mental status (agitation, anxiety, disorientation, restlessness, and excitement), neuromuscular abnormalities (tremor, clonus, hyperreflexia, muscle rigidity, bilateral babinski sign, akathisia), and autonomic hyperactivity (hypertension, tachycardia, tachypnea, hyperthermia, vomiting, diarrhea, arrhythmias, shivering). Both mydriasis and miosis can occur in tramadol poisoning.<sup>1,5,13</sup> The aim of this study was to determine the clinical manifestations & causes of tramadol suppository poisoning in children and to create public awareness about the prevention of this poisoning.

**Materials & Methods**

This was an observational, retrospective, single-center case-series study of hospitalized children, in Dhaka Shishu Hospital during the periods of July 2016 to March 2017. Eleven children with history of accidental intake of tramadol suppositories were enrolled in this study. Data regarding age of patients, time to reach hospital, parent’s education and economic condition, size, shape, color and dose of suppository, clinical features, consciousness, cardiorespiratory status (e.g.tachycardia, bradycardia, respiratory depression, apnea, seizure) and tonicity at admission and during hospital stay were taken. Pupil’s size was also examined. Investigation like ABG (arterial blood gases analysis) was done along with other relevant laboratory investigations. Use of ventilator and naloxone were taken. Toxicological diagnosis was not done. Hospital stay and mortality were recorded. Then all the data were analyzed by frequency distributions with the help of SPSS version-17.

**Results**

In this study, 7/11(64%) cases were male and 4/ 11(36%) female. Mean age was 7.8 month (range 27days-18 month). Mean duration of hospital stay was 46.4 hours (range 11h-168h). Mean time to reach the hospital was 5.2 hours (range 3h – 12h). Paracetamol in 2(18%) cases and glycerin suppository in 9(82%) cases were main drugs that were supposed to be introduced instead of tramadol.

Main clinical features were drowsiness in 4(36%) cases, tachycardia in 3 (27%) cases, semi consciousness in 2(18%) cases, unconsciousness in 2(18%) cases, seizure in 2(18%) cases, apnea in 2(18%) cases, shallow respiration in 2(18%) cases, hypotension in1(9%) case, and hyper tonicity in 2(18%) cases. Ventilator was required in 2(18%) cases having septicemia. Respiratory acidosis was present in two cases and metabolic acidosis was present in one case. One patient got naloxone as antidote and one patient died. Each mother had individual occupation including lawyer in 1(9%) case, businessman in 3(27%) cases, day laborer 3(27%) cases, service holder in 3(27%) cases, and even doctor in 1(9%) case. Mother’s anxiety (6/11), keeping drugs in same containers (11/11), similarities of suppository’s size, shape and color (11/11) were the main causes of mistakes in this study.

**Table I**

*Clinical manifestations of tramadol poisoning (total case n=11)*

Clinical manifestations	No of case (percentage)
Drowsiness	4(36%)
Semiconscious	2(18%)
Unconscious	2(18%)
Seizure	2(18%)
Hypertonicity	2(18%)
Shallow respiration	2(18%)
Apnea	2(18%)
Tachycardia	3(27%)
Hypotension	1(9%)
Miosis	2(18%)

**Table-II**

*Occupations of Caregiver (total case n=11)*

Occupation of Care Givers	No of case (percentage)
Lawyer	1(9%)
Service Holder	3(22%)
House wife	3(27%)
Day laborer	3(17%)
Physician	1(9%)

**Table- III**  
*Causes of Mistake (total case n=11)*

Causes of mistake	No of case (percentage)
Mothers/care givers anxiety	6(54%)
Keeping drugs in same container	11(100%)
Similarities of suppositories in size, shape and color	11(100%)

### Discussion

In this study total eleven cases of accidental tramadol suppository poisoning were found and Paracetamol in two cases and glycerin suppository in nine cases were main drugs that were supposed to be ingested instead of tramadol. Published data was present regarding oral, parenteral administration of tramadol intoxication but study only on per rectal accidental tramadol suppository poisoning was very rare. In one study administration of a 100 mg suppository to a 6-month-old child was seen.<sup>5</sup>

In this study seven (64%) cases were male and 4(36%) female. Mean age was 7.8 months (range 27days -18m). In the study of Hossein et al.<sup>5</sup> mean age of the patients was  $3.7 \pm 2.9$  years (range; 9 months to 10 years) which was more than our study. In our study mean duration of hospital stay was 46.4 hours (range 11h-168h). In study of Hossein et al.<sup>5</sup> mean duration of hospital stay was  $49.5 \pm 38.1$ h (range 12h-216h) which is similar to this study. In our study, mean time to reach the hospital was 5.2 hours (range 3h – 12h). In other study all patients were referred to hospital within the first 10.5 h of exposure and the mean time was  $4.7 \pm 2.9$  h (range: 1 -10.5 h).<sup>5</sup> In our study all cases were from Dhaka district except one that came from outside of capital. It also showed that the tendency for seeking of health care facility among people in poisoning cases was better.

Mother's anxiety (6/11), keeping drugs in same containers (11/11), similarities of suppository's size, shape and color (11/11) were the main causes of mistakes by mothers of all profession in this study, but in other studies tramadol was mostly used for the therapeutic purpose like analgesic or unintentional oral exposure.<sup>5</sup> Alizade et. al. showed in their study that family drug addiction was one of the causes of acute paediatric poisoning including tramadol poisoning which is different from our observation.<sup>14</sup> In this study the main clinical features

were drowsiness in 4(36%) cases, semi consciousness in 2(18%) cases but in study of Hossain et al, it was found that 70% cases had decreased level of consciousness, 15% experienced apnea, and 20% had nausea and vomiting.

Single case out of 11 got Injection naloxone as antidote in this study but in the study of Hossain et al. naloxone use was commonly used as in 85% cases. In most cases, two-thirds of the initial naloxone bolus dose which had reversed opioid effects was used per hours for six hours. It was then titrated every 6 h to achieve a normal consciousness level and preserve adequate respiration. In other studies in children it was showed that individual naloxone doses up to 0.4 mg/kg and constant intravenous infusion of 0.16 mg/kg/h had not been associated with adverse effects.<sup>5,15</sup> In this study ventilator was required in one case having septicemia. and one patient died. But in other study, it was found that none of the children required intubation and all patients were discharged without any complications with a significantly higher length of stay in apneic patients.<sup>5</sup>

### Conclusion

Altered consciousness, respiratory difficulty are common features of tramadol suppository poisoning. Anxiety of parents and similarity in shape, size and color of paracetamol and glycerin suppository with that of tramadol, keeping in same container are main causes of mistakes. More cautiousness of parents, dissimilarity among different suppository in color shape, size and using of different containers of drugs may be the preventive way of this poisoning.

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