

# Levothyroxine Overdose in a Toddler – A Case Report

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## ABSTRACT

Levothyroxine tablet overdose, can happen in children, because of unique physical nature of the tablet. Although it has a benign course, systemic symptoms of overdose may manifest in few children. This cannot be predicted based on dose consumed or by thyroid function tests. Propranolol and steroid can be used for systemic autonomic symptoms. Delayed manifestation of overdose may occur, which needs follow up. In this report, we present a toddler who had levothyroxine overdose and was managed with monitoring and follow up. Her hyperactivity was managed with oral triclofos. We would also like to emphasize that serial thyroid function tests are not needed in these children.

**Keywords:** Hyperactivity, Levothyroxine, Toddler, Thyroid function test, Triclofos



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## INTRODUCTION

Hypothyroidism is a common disease affecting both children and adults, which is managed with levothyroxine tablets. These tablets are small in size, colourful in appearance and have bland taste. These properties may lead to accidental ingestion of levothyroxine by children. In this case, we describe a toddler who had levothyroxine overdose.

## CASE REPORT

Two and half years old, developmentally normal female toddler was brought after 10 hours of accidental ingestion of 1.5 mg of levothyroxine tablets (20 tablets of 75 µg strength tablets). Mother was hypothyroid on levothyroxine supplement. Child was irritable and hyperactive. There was no palpitation, flushing, excess sweating, vomiting, diarrhea, tremors or seizures. On examination child had heart rate of 120 / min, respiratory rate of 20 / min, blood pressure of 90 / 60 mm Hg and temperature of 98.6 F. Her general examination, head to toe examination, anthropometric assessment and systemic examination were normal. ECG done showed normal rhythm and rate. Her thyroid function test is shown in Table 1. Her complete blood count was within normal limits.

Gastro intestinal decontamination was not done, as the child had presented to us 10 hours post ingestion and there were no systemic features. However, in view of irritability and hyperactivity, child was sedated with stat dose of oral triclofos. Child was monitored continuously for overdose features. After 24 hours of ingestion, her irritability improved. There were no symptoms of autonomic dysfunction. Child was followed up for next 14 days and there were no features of levothyroxine overdose.

**Table 1.** Thyroid function tests – Post ingestion

Test (Reference range)	Day 1	Day 2	Day 4
Free T4 (0.93 – 1.7 ng / dl)	> 7.7	> 7.77	3.67
Free T3 (2.0- 4.4 pg / ml)	14.49	16.54	10.57
TSH (0.4 to 6.4 µIU / ml)	0.32	0.21	0.05

## DISCUSSION

Levothyroxine overdose in children usually has benign course. This may be due to accelerated metabolism of thyroxine (T4) to inactive form of reverse triiodothyronine (T3). Clinical symptoms of overdose like palpitations, fever, diarrhoea, tremors, seizures, nervousness, irritability and hyperactivity may develop in few children.<sup>1</sup> In our case, child had irritability and hyperactivity. Child did not sleep for almost 36 hours.

The clinical symptoms of overdose are rare. Its occurrence is neither dependent on amount of levothyroxine ingested nor on free T4 or T3 levels.<sup>2</sup> In our case, child had irritability and hyperactivity at free T3 level of 14.49 pg / ml but was symptom free at level of 16.54 pg / ml. T4 and T3 levels are not useful in monitoring of these children. It can be only used to document the overdose. Levothyroxine overdose in children can be managed with supportive care and careful monitoring. Propranolol and steroids can be used if they develop signs of autonomic dysfunction. Diazepam can be used for seizures.<sup>3</sup>

In our case, child's irritability, hyperactivity and disturbed sleep was managed with oral sedation. This form of treatment has not been described in literature before. Triclofos, which is a metabolite of chloral hydrate is a safe medication for sedation in children and it is commonly used as sedative before many diagnostic procedures.<sup>4</sup>

Half-life of T4 is up to seven days and delayed symptoms can be there till 10 to 14 days. Delayed onset of symptoms has been described previously. Hence careful monitoring and follow up of these children is required.<sup>5, 6</sup>

## CONCLUSIONS

Levothyroxine overdose in children is benign usually, but symptoms may be delayed sometimes, which necessitates follow up. Thyroid function tests are not useful in management except for documentation of drug overdose. Irritability and hyperactivity can be managed with triclofos oral sedation.

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