Acute levothyroxine overdose

Benign clinical outcome and late onset symptoms

A case series

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Objective

We investigated the relation between ingested LT dose, symptoms and age. Also late onset symptoms and influence of multiple drug ingestion on clinical outcome were explored.

Conclusion

The clinical outcome of LT overdose is often benign. We were not able to demonstrate any correlation between ingested LT dose and risk of developing symptoms in children or adults registered at the DPIC. At follow up, however, we found a large number of patients describing late onset LT related symptoms. None of these cases resulted in severe outcome.

References


Background

When and how to treat levothyroxine (LT) is controversial. Some might even say that the risk of exposure must be weighed against the risk of decontamination (1). The initial lack of symptoms, coupled with widely varying individual clinical responses, makes it difficult to evaluate the effectiveness of medical intervention in patients with LT intoxication (2). The benign clinical manifestations of even large doses of LT is often emphasized. However severe outcome such as tonic-clonic seizure in children and malignant hyperthermia, arrhythmia and coma in adults has been reported in the literature (3,4).

Methods

Between March 2007 and September 2012 all LT ingestions registered at the Danish Poison Information Centre (DPIC) were evaluated and the following parameters were recorded: age, dose, time since ingestion, multiple drug intake and symptoms.

Follow up: In order to evaluate the frequency of late onset symptoms, we aimed to contact all patients who at the time of their primary contact to DPIC were asymptomatic.

Number of cases registered: 182

Age (years), mean (SD): 18.36 (24.41)

Females, N (%): 112 (61.54)

Cause, N (%):
   - Intended ingestion: abuse
   - Suicidium
   - Unintended ingestion: play, incorrect dose, accident, unknown
   - Intended ingestion: 3 (1.65)
   - Suicidium: 45 (24.73)
   - Unintended ingestion: play, incorrect dose, accident, unknown
   - Intended ingestion: 98 (53.85)
   - Suicidium: 8 (4.40)
   - Unintended ingestion: play, incorrect dose, accident, unknown
   - Intended ingestion: 8 (4.40)
   - Suicidium: 17 (9.34)
   - Unintended ingestion: play, incorrect dose, accident, unknown
   - Intended ingestion: 5 (2.75)

Multiple drug ingestion, N (%):
   - >16 years: 45 (24.73%)
   - ≤15 years: 8 (4.40 %)

Dose (micrograms), mean (SD):
   - Intended ingestion: 1570 (2680)
   - Unintended ingestion: 507 (898)
   - Unknown: 1060 (3323)

Hours since ingestion, mean (SD): 7.59 (52.6)

Subjects with symptoms, N (%): 29 (16.5)

A comparison of subjects who had developed symptoms with those who did not, did not show a significant difference in ingested dose. On the contrary, symptomatic subjects appeared to have ingested averagely lower doses than non-symptomatic (fig. 2).

Figure 2: A comparison of subjects who had developed symptoms with those who did not did not show a significant difference in ingested dose. P=0.68, Wilcoxon

Results

Demographics and details about ingested LT in the total study population appear from table 1.

Only 21 out of 153 eligible patients could be contacted for a follow-up interview. Of those 9 (43%) described tremor, diaphoresis, severe and mild hyperactivity, insomnia, restlessness, tachycardia, fever and headache.

Figure 1: Number of cases divided by age

Limitations

Because of the small number of patients who participated in the follow-up interview, it is unclear whether the frequency of late poisoning symptoms can be expected to be the same in a larger population.