

CASE REPORT ON THIAMETHOXAM POISONING

Bincy Babu^{1*} and Jisha Helen George²

*Pharm Dintern, K. K. College of Pharmacy, 1/161, Sanakaralinganar Road,
Gerugambakkam, Chennai, Tamilnadu, Pin Code: 600128.

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Corresponding Author*Bincy Babu**

Pharm Dintern, K. K.

College of Pharmacy, 1/161,

Sanakaralinganar Road,

Gerugambakkam,

Chennai, Tamilnadu.

Pin Code: 600128.

ABSTRACT

Background: Thiamethoxam is a neonicotinoid insecticide active against a broad range of commercially important sucking and chewing pests. These insecticides act as agonists at Nicotinic, acetylcholine, receptors, which cause insect paralysis and death. The high specificity for receptors in insects was considered to possess highly selective toxicity to insects and relative sparing of mammals. However, an increasing number of cases of acute neonicotinoid poisoning have been reported in recent years. **Case presentation:** This is a case report of a man who developed gastrointestinal symptoms and renal failure after ingestion of neonicotinoid insecticide. A detailed literature review found that respiratory, cardiovascular and certain neurological, gastrointestinal, renal presentations are warning signs of severe

neonicotinoid intoxication. **Conclusion:** The amounts of ingested neonicotinoid insecticide and the plasma neonicotinoid concentration are not useful guides for the management of intoxicated patients. Supportive treatment and decontamination are the practical methods for the management of all neonicotinoid-poisoned patients.

KEYWORDS: Neonicotinoid, gastrointestinal, renal failure.

INTRODUCTION

Thiamethoxam is a neonicotinoid insecticide active against a broad range of commercially important sucking and chewing pests. The biological effects of this chemical class in target species are mediated primarily by an interaction with nicotinic acetylcholine receptor sites. The relatively low risk for non-target organisms and environment, high specificity for target insects and the versatility in application methods have made neonicotinoids popular

insecticides recent years. This is a case presentation of a patient who ingested thiamethoxam as a suicide attempt.

CASE PRESENTATION

A 60 year old man with no comorbidities consumed three mouthful of thiamethoxam with one cup of water. He didn't reveal the incident to anyone. Three days later, he developed abdominal pain, nausea, vomiting, loss of appetite and reduced urine output. He is a smoker and an alcoholic and his last binge of alcohol was along with the consumption of thiamethoxam. At the time of arrival in the Emergency Department, his vital signs were as follows: Body temperature: 98.6⁰ F, Pulse rate: 60 bpm, Respiratory rate: 20/min, Blood pressure: 150/80mmHg. There were no complaints of dyspnoea, palpitation, and paraesthesia. On evaluation the patient was found to be euphoric, conscious and oriented. Laboratory investigations demonstrated a white blood cell count of 11,100 cells/cumm, urea: 63mg/dl, creatinine: 8.3mg/dl and INR: 0.89. A plain radiograph of the chest, electrocardiogram was normal. USG abdomen revealed minimal ascites.

The patient underwent supportive care and treatment with IV antibiotics. He underwent 2 cycles of haemodialysis during hospital stay in the Intensive Medical Care Unit and his elevated urea and creatinine were reduced to normal range. The patient made an uneventful recovery. He was discharged on the fifth day of admission.

DISCUSSION

Thiamethoxam is a neonicotinoid active against a broad range of commercially important pests. The biological effects of this chemical class in target species are mediated primarily by an interaction with nicotinic acetylcholine receptor sites.^[1] The mortality rates of neonicotinoid poisoning were 0-2.9% which is lower than that of other insecticides.^[2] Among the neonicotinoid group, Imidacloprid was the major poison which constituted 94% of the intoxication events that too in both oral and inhalation routes as it is the first commercialized and the best-selling neonicotinoid insecticide in the world.^[3] The plasma concentration doesn't appear appear to be useful for guiding clinical management. The presence of severe respiratory, cardiovascular and neurological symptoms is a practical guide for treating patients with neonicotinoid poisoning.^[4]

CONCLUSION

With the wide application of neonicotinoid insecticides, the numbers of neonicotinoid poisonings have increased in the last decade. The amount of ingested neonicotinoid and the plasma concentration are not useful guides for the management of intoxicated patients. Supportive treatment and decontamination are the current practical management methods for all neonicotinoid poisoned patients.

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