



NEAR FATAL AMITRAZ: A NOT SO UNCOMMON POISONING

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ABSTRACT

Background: Amitraz is a pharmaceutical, veterinary, and agricultural product which is used worldwide to control ectoparasites in animals. Its widespread use has led to increased cases of poisoning in rural parts of India.

Aim: To study the clinical features, complications, laboratory abnormalities and outcome of the patients with acute amitraz intoxication.

Methodology: The study is a retrospective case series study conducted in HSK hospital between the period of Feb 2019 and May 2020.

Results: A total of 11 patients were analysed and results revealed CNS depression and vomiting in 8 of those patients with 1 patient with respiratory failure requiring mechanical ventilation.

Conclusion: Amitraz poisoning appears to be severe with CNS depression being the most common symptom. But most patients stabilise and recover quickly. Patients should be monitored for respiratory failure as it is a dreadful complication. Treatment is symptomatic as no antidote is available.

KEYWORDS : Amitraz, Poison, Amitraz vs OP, Clinical profile

INTRODUCTION

Amitraz, chemical name is - 1,5 di-(2,4-dimethylphenyl)-3-methyl-1,3,5-tri-aza-penta-1,4 diene, is a of the formamidine pesticides member¹. It's indicated in the treatment of generalized demodicosis in dogs, for control of ticks and mites on cattle and sheep, and to manage psylla infestations of Pears as an acaricide and insecticide². Amitraz is an 2 adrenergic agonist, it acts by inhibiting monoamine oxidase (MAO) enzyme activity and prostaglandin E2 synthesis¹. Amitraz poisoning occurs through the oral, dermal or nasal route³. Knowledge regarding the pharmacology, its uses and toxic effects is known to veterinarians. But, in human beings, very few are reported cases of amitraz poisoning especially from india⁴. CNS depression, bradycardia, hypothermia, hypotension, hyperglycemia, glycosuria, vomiting and respiratory failure are the consequences noted⁵.

AIMS AND OBJECTIVES

To study the clinical features, complications, laboratory abnormalities and outcome of the patients with acute amitraz intoxication.

MATERIAL AND METHODS

The study is conducted at S. Nijalingappa Medical College and HSK hospital and Research Centre, Bagalkot. This is a Retrospective analysis of the patients admitted from the emergency department of our hospital between Feb 2019 and May 2020. A total of 14 cases were admitted, out of which 11 gave consent to participate in the study. All patients were informed about the study and informed consent was taken.

A detailed history was taken and complete physical examination was done. All routine investigations including blood parameters, electrocardiogram, chest X-ray and urine analysis were done. Diagnosis was confirmed with patient's relatives who brought container/label of amitraz on admission / during period of hospitalisation.

Detailed analysis regarding the age, sex, mode of intoxication, route, clinical signs and symptoms, laboratory parameters and outcome of the patient was done.

OBSERVATIONS AND RESULTS

A total of 11 patients admitted and data was analysed. Table 1 shows age distribution, 7 were males and 4 were females.

Patients were in the age group of 15 – 54 years with maximum between 15 – 30 and only 1 above 45 years. 7 were male and 4 females as shown in table 2. Figure 1 shows the modes of poisoning where 9 were suicidal and 2 were accidental consumption. The route of poisoning was oral in all cases. 15-30 ml of amitraz was consumed on average by the patients.

The predominant presentation of the patient was CNS depression, seen in 9 out of 11 patients. It resolved spontaneously in 12-24 hours. Vomiting was the next common symptom in 8 cases. 1 patient had 2 episodes of seizures on presentation. Respiratory failure was observed in 1 patient who required mechanical ventilation. Shown in table 3.

Miosis occurred in 5 out of 11 cases. Bradycardia was observed in 4 patients who responded to IV atropine 1-2 doses. 2 patients had hypothermia. Hypotension was noted only in one patient who improved on giving IV fluids.

Laboratory investigations as shown in table 4, showed LFT derangement in 3 patients who had raised ALT and AST. 2 patients had renal function dysfunction. Hyperglycemia was noted in 2 patients who were non diabetic. Urine analysis and coagulation profile showed no abnormalities. ECG was normal in all patients.

All the patients were admitted in ICU. Gastric lavage was administered in all patients. Average stay was 18-72 hours in the hospital. All patients recovered and no mortality was observed.

Table 1 – Age Distribution Of Patients

Age group	Number of cases
15-30	7
31-45	3
46-60	1

Table 2 – Sex Distribution Of Patients

Sex	Number of cases
Male	7
Female	4

Table 3 - Signs And Symptoms

Symptoms	Number of patients
CNS depression	8

Vomiting	8
Miosis	5
Bradycardia	4
Hypothermia	2
Respiratory depression	1
Hypotension	1
Seizure	1

Mode of poisoning



Figure 1

Table 4 – Laboratory Investigations

Biochemical parameter	No. of patients
Deranged LFT	3
Deranged RFT	2
Hyperglycemia	2

DISCUSSION

Amitraz is a pharmaceutical, veterinary, and agricultural product which is sold and used worldwide under various generic names⁶. The reported outcomes include CNS depression, bradycardia, hypothermia, hypotension, hyperglycemia, glycosuria, vomiting and respiratory failure. The predominant symptom in our study was CNS depression which is due to alpha adrenergic receptors. It begins usually after 30-60 minutes and resolves spontaneously in 12-24 hours in our cases. At low doses CNS stimulation may occur, as manifest by hyperreactivity to external stimuli such as handling, considerably increased food consumption⁷. Topical application amitraz in the dog has been shown to increase plasma glucose and suppress insulin release⁸. Bradycardia and miosis together often suggests organophosphate poisoning³. In our cases serum cholinesterase levels were normal and no other findings were suggestive of organophosphate poisoning.

Amitraz inhibits monoamine oxidase (MAO) enzyme activity and prostaglandin E2 synthesis¹. Hypothermia was noted in 2 of our patients. The basic treatment approach to these patients is initial stabilisation and removal of the poison by gastric lavage. Atropine for bradycardia can be given. IV fluids in case of hypotension are preferred. In case of respiratory failure patient is put on mechanical ventilation. Apart from other symptomatic treatment, no specific antidote for this is available.

Amitraz consumption has become very common in rural areas nowadays because of its increased use. Despite the increase in number of patients, there is no increase in mortality. All patients recovered fully.

CONCLUSION

A retrospective analysis of cases of acute amitraz poisoning showed that it is not an uncommon entity in rural population, although its reported incidence is low in urban areas. Due to the ease of availability, low cost and no regulation on sale, its consumption has increased in rural areas. It can be reduced by educating the people and controlling sale by involving regulatory authorities. The most common clinical feature is CNS depression and patients should be watched for signs of

impending respiratory failure. As there is no specific antidote for amitraz poisoning, treatment should be symptomatic and supportive.

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