

Nirmasi (Delphinium) Poisoning with Salvoes of Malignant Ventricular Arrhythmias in Central Nepal: A Case Report

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ABSTRACT

Background: Nirmasi is a commonly used herb in Nepal especially in hilly and Himalayan regions. It is known as Delphinium species herb. Nirmasi has been used in Nepalese and Indian rural communities since ages for treatment of chronic illnesses like headache, epilepsy, mania, paralysis, rheumatism, toothache, and various types of pain. However, many species of Nirmasi (Delphinium) are poisonous and look quite similar in morphology to the beneficial ones. As a result, unintentional poisoning is common. Poisoning due to these plant products results in various symptoms attributed to gastric irritation, competitive neuromuscular blockade, and cardiotoxicity caused by various alkaloids present in them. We report here a case of poisoning due to Nirmasi herb ingestion presenting as epigastric pain, vomiting, profuse sweating, syncopal attack, hypotension and malignant ventricular arrhythmias managed successfully with antiarrhythmics and supportive treatment.

Keywords: Nirmasi, Delphinium; Cardiotoxicity; Antiarrhythmics

INTRODUCTION

Nirmasi is a species of wildflower in the genus Delphinium native to Central Asia. It is found in hilly and himalayan regions of Nepal at a height between 8000 and 12000 feet above sea level. It is one of the important drugs used as indigenous medicine in Nepal and India, especially in Unani medicine.¹ The roots have been used in a variety of ailments such as aconite poisoning, brain diseases, fungal infection, piles and toothache as analgesic and astringent. It's use has been verified and validated in morphine-induced physical dependent de-addiction studies.² However, some species are toxic and the toxicity of the genus Delphinium is variable depending on growth stages and concentration of toxic substance. Poisoning during grazing occurs in cattles and can have fatal consequences. However, in humans, it usually occurs due to accidental ingestion of mistaking the medicinal species. This case report illustrates rare Nirmasi (Delphinium species) poisoning presenting with syncopal attack with hypotension with salvoes of malignant ventricular arrhythmias.



Figure 1. Delphinium (Nirmasi) species & its herb

METHODS

A 36 years male with past history of Type 2 Diabetes Mellitus presented in the emergency unit of Chitwan Mutu Aspatal (Cardiac Hospital), Nepal with a history of ingestion of herbal plant 'Nirmasi' (Delphinium) offered by wife for medicinal purpose. It was followed by epigastric and chest discomfort with multiple episodes of vomiting, shortness of breath, generalized tingling/burning sensation, restlessness and syncopal attack with profuse sweating immediately after ingestion. On presentation to an emergency, the patient was toxic with cool extremities, profuse diaphoresis, drowsy and hypotension. The patient had blood pressure of 70/50 mm of Hg and was immediately resuscitated with bolus of two units of Normal saline. He had irregular heart rhythm with frequent ventricular extrasystoles, ventricular bigeminy, couplets with salvoes of polymorphic ventricular tachycardia (mostly non-sustained) on the cardiac monitor, an axillary temperature of 97.2 degree Fahrenheit, and a respiratory rate of 26 breaths per minute, and oxygen saturation of 98% with 4-6 lits/min of oxygen.

RESULTS

All the relevant investigations including complete hemogram, renal function tests, routine urine examination, liver function tests, thyroid function

Figure 2. Electrocardiogram showing frequent extrasystoles (couplets) with polymorphic ventricular tachycardia.

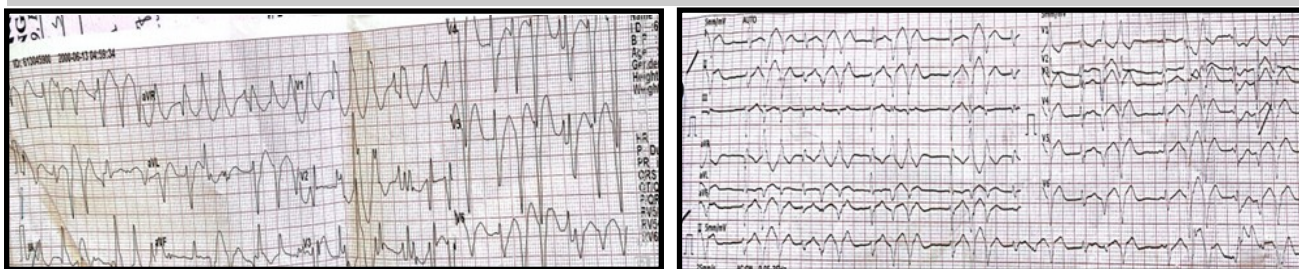


Table 1: Hematological and Biochemistry parameters.

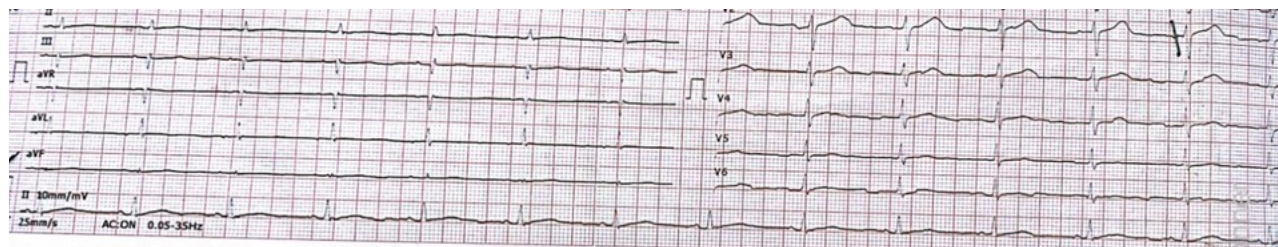
Hematology	Biochemistry	Arterial Blood Gas (ABG) analysis	Urine Examination	Other investigations
Complete Hemo-gram	RBS-209mg/dl	PH-7.34	Urine R/E-Normal	Troponin I and CPK-MB: Negative
Hgb-14.7gm%	RFT	PCO2-28mmHg		
Platelet-175	-Blood Urea:61mg/dl	HCO3-15mmol/L		
WBC-15070	-Serum Cr:1.6mg/dl			
N83 L09	-Serum Na:142mEq/L			
	-Serum K:3.7mEq/L			
	LFT-WNR		Urine for Ketone	
	TFT-WNR		Body-Positive	

Note: RFT-Renal function tests, RBS-Random blood sugar, LFT-Liver function tests, TFT-Thyroid function tests.

tests, Arterial blood gas analysis, Troponin I and CPK-MB were sent and the reports are illustrated in (Table 1).

The patient was kept nil per oral and received maintenance fluid at 100 ml/hour after bolus administration, injectable proton pump inhibitor and

ondansetron. He was immediately given loading dose of Amiodarone but the arrhythmias persisted. He was subsequently administered injection 100mg of Xylocard(xylocaine 2%) followed by Magnesium Sulfate and transferred to CCU with maintenance dose of Amiodarone. Defibrillator was ready



if required. Within few hours, the extrasystoles load decreased, patient had normal BP(110/70mmHg) without inotrope support.

DISCUSSION

The genus Delphinium has been long known for its toxicity in mammals.³ Over 40 norditerpenoid alkaloids are found in Delphinium species. The methylsuccimidoanthro-nyllycoctonine (MSAL) group of alkaloids is the most toxic. The lycoctonine group of alkaloids, found in Delphinium peregrinum, has a moderate toxicity.⁴ The mechanism of toxicity of this class of alkaloids is neuromuscular paralysis; they compete as post-synaptic inhibitors of the neurotransmitter acetylcholine, specifically, acting at the α 1 nicotinic sites in the mus-

cle and brain, causing muscular fatigue, depressed respiration and other curare-like symptoms.^{5,6} Our patient presented with complaints of dizziness with syncopal attack secondary to malignant ventricular arrhythmias and hypotension which could be the effect of such alkaloids competitively inhibiting the acetylcholine at preganglionic sympathetic synapse blocking the sympathetic outflow to the heart. There has been no specific antidote noted for Delphinium poisoning in humans. However, physostigmine has been shown to reverse the effects of the alkaloids present in Delphinium in cattle.³ In our patient, emergency care with appropriate intravenous fluids and anti-arrhythmics improved hypotension and arrhythmias within few hours. So, the patient’s history of

consumption of this Delphinium plant parts is ultimate for diagnosis in Nepal. Proper studies need to be conducted in Nepal to identify the medical value and toxicity of different species of Delphinium. This sort of accidental poisoning warrants such studies. Medical awareness among residents of areas where Delphinium is a common medicinal plant

is an important issue. Physicians and cardiologists working in Nepal where homeopathic medicines are commonly used must look into these types of accidental poisoning of plant patients with a high index of suspicion.

Conflict of Interest: None.

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