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Hypotension, bradycardia and reversible conduction defect induced by prescription of Bhutanese traditional medicines

Ugyen Tshering[1], Shankar LeVine[2], Melanie Watts[3]

[1-3]*Department of Emergency Medicine, Jigme Dorji Wangchuck National Referral Hospital, Thimphu, Bhutan*

ABSTRACT

Aconite is widely used in both Chinese and Ayurvedic medications and therefore often used within the Himalayan Kingdom of Bhutan. Despite its use in traditional medicine, because of its narrow therapeutic index, significant cardiotoxic and neurotoxic events are documented due to both intentional and unintentional ingestion. In this case series we present 2 cases of bradycardia, hypotension and reversible conduction defects caused by prescribed aconite-based Bhutanese traditional medicines, for different therapeutic goals, who suffered cardiac dysrhythmias.

Keywords: Aconite; Conduction delay; Toxicity; Traditional medicine.

INTRODUCTION

The practice of traditional medicine coexists alongside allopathic medicine in the Himalayan Kingdom of Bhutan with 1,09,924 patient visits recorded for traditional medicine services in 2015 across Bhutan[1,2]. Like all medications, some of the Bhutanese traditional medicines have the potential to be toxic, particularly the ones that contain Aconite as an active ingredient[3]. While aconite poisonings from herbal medicine have been reported from around the world, they are most prominent in Asia due to the use of aconite in traditional Chinese and Ayurvedic medications[4-6]. However, no reports of toxicity were found in Bhutan. In the following case series we report two cases of unintentional aconite toxicity.

CASE SERIES

CASE 1

After consuming aconite-containing Bhutanese traditional medicine for treatment of hypertension, a 42 year old male presented to the emergency department complaining of acute dizziness starting at 5:00 a.m. He had a history of untreated hypertension for four years, but was otherwise healthy. Review of his medical records documented by the traditional physician revealed an elevated blood pressure at 172/118 mmHg on the day of consultation. Given his poorly controlled hypertension aconite-containing traditional medicine "Rta.ze.dmar.po" was prescribed. He had taken the first dose at bedtime, a few hours prior to symptom onset.

On presentation to the Emergency Department, his physical examination was remarkable for hypotension and bradycardia. His blood pressure was 88/60 mmHg and heart rate was 59 beats per minute. The remainder of his physical exam, including neurological exam was unremarkable. Electrocardiogram showed a junctional rhythm (Figure 1).

Given the patient's recent ingestion of a traditional medicine, acute toxicity was suspected. A review of the traditional medicine formulary demonstrated Aconitum laciniatum (leaves) as the active ingredient of the traditional medicine. Subsequent review demonstrated that "Rta.ze.dmar.po" contains 11.4 mg of Aconitum laciniatum (leaves) in 500 mg tablet[7]. The patient was immediately placed on continuous cardiac and haemodynamic monitoring. Supportive care was initiated with intravenous normal saline. The patient was admitted to the internal medicine service and his symptoms, blood pressure and heart rate gradually improved. ECG reverted from junctional bradycardia to normal sinus rhythm approximately 6 hours after admission. He was discharged in stable condition the following day after being prescribed losartan 50 mg once daily. On follow-up with the patient at 6 weeks he was described as having resolution of symptoms and his blood pressure was better controlled.

CASE 2

A 33 year old woman came to the Emergency Department (ED) at 4:30 p.m. complaining of dizziness of 1 day duration. She gave a history of being on traditional medicines for sinusitis for 3 days prior to symptoms onset. This medication was later identified as "Chi.med.srin.sel" which contains 11.4 mg of Aconitum laciniatum (tuber) in a 500 mg tablet[7]. On presentation, her pulse rate was 57 beats/min, BP 80/37 mmHg. ECG done in the ED demonstrated an idiojunctional escape rhythm at a rate of 60 beats/min (with features suggestive of pan-conduction system disease including an absence of sinus node activity, A-V dissociation with idiojunctional rhythm, and left bundle branch block pattern (Figure 2).

Corresponding author:
Ugyen Tshering
ugentshering@hotmail.com

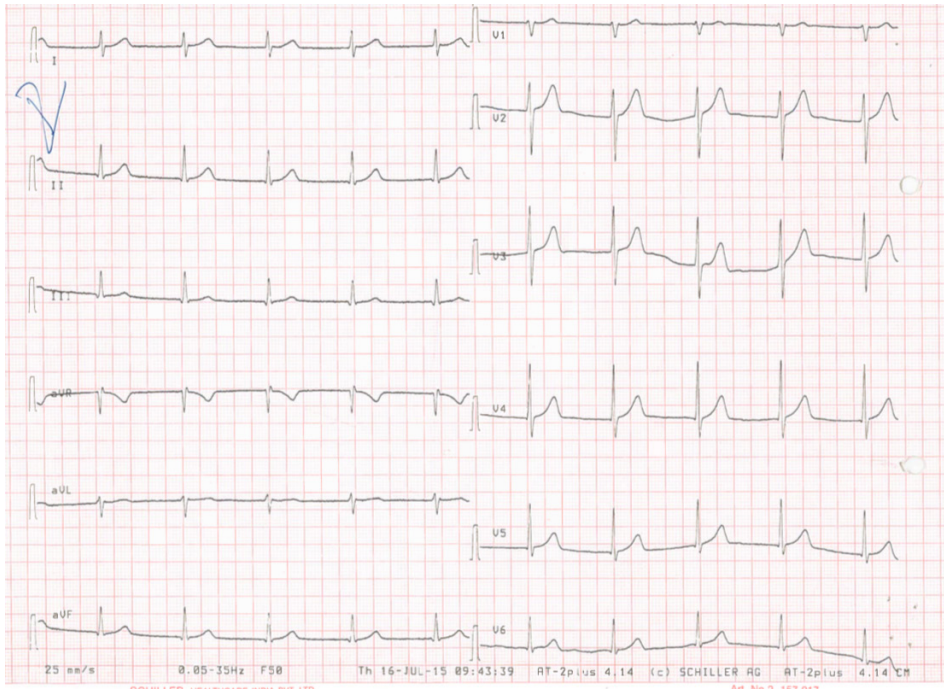

Figure 1. ECG showing junctional rhythm on initial presentation to the ED

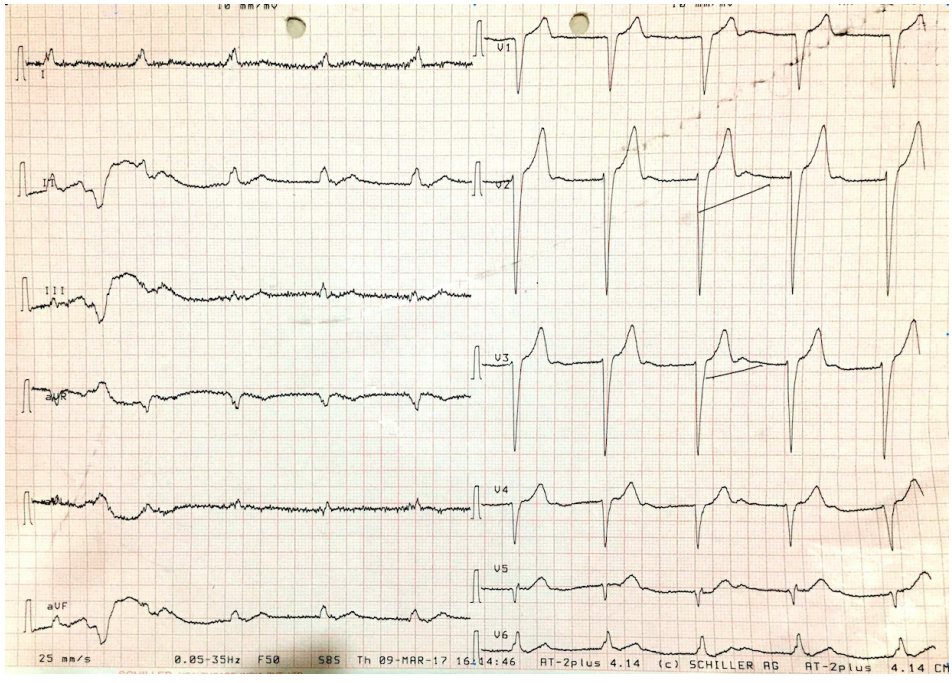

Figure 2. Wide-complex escape rhythm

She remained symptomatic with dizziness, bradycardia and hypotension for the initial few hours of her Emergency Department stay. The patient was treated with supportive measures and observed closely for the development of ventricular tachyarrhythmias. Clinical symptoms and cardiac conduction abnormalities resolved completely within approximately 16 hours. Subsequent electrocardiographic monitoring was unremarkable. Further diagnostic tests including 24-hour continuous cardiac monitoring and echocardiogram with Doppler study did not reveal any underlying rhythm disorder or structural cardiovascular abnormality. Her haemodynamics improved: heart rate increased to 78 beats/minute and blood pressure returned to 106/72 mmHg. She was discharged after a 24 hour observation period in the emergency department.

DISCUSSION

Aconite is the usual reference to aconitum, the plant genus that contains a couple hundred species of plants[8]. In different parts of the world these have been known by various names most commonly wolfsbane or monkshood. In Dzongkha, the national language of Bhutan, aconite is known as Tsenduk; Duk meaning poison. Currently the use of aconitum for eastern traditional medicine is prevalent with several of the traditional medicines of Bhutan containing processed aconite as an active ingredient[1,3]. Reported therapeutic indications are numerous including the management of hypertension, cold symptoms and as an analgesic[3]. Aconite-containing traditional medications have an extremely narrow therapeutic index as is evidenced by this case series and others in different countries revealing accidental aconite toxicity while taking traditional medications[4-6].

The symptoms of aconite poisoning following exposure have been reported in as soon as a few minutes to a few hours, persisting for more than 24 hours[9,10]. The previously described signs and symptoms of aconite toxicity can largely be divided into neurologic and cardiac. Neurologic symptoms include dizziness, paresthesias, weakness and coma. Signs of cardiac toxicity include bradycardia, hypotension, ectopic beats, bundle branch block and ventricular dysrhythmias. Aconite has a number of mechanisms of action including sodium channel activation, anticholinergic effects mediated by the vagal nerve and activation of the ventromedial nucleus of the hypothalamus[9,10]. Ultimately, mortality from aconite poisoning is usually due to ventricular arrhythmia and in-hospital mortality has been estimated at 5-15%[8,11].

The diagnosis of aconite toxicity is purely clinical, as a test for an aconite level is not available in Bhutan. The diagnosis is suspected by patient history and when written prescriptions are available for review. The patients in this case series both clearly provided a history of recent aconite-containing traditional medicine use and presented with symptoms commonly seen with aconite toxicity. Both patients described dizziness and were found to have bradycardia, hypotension and cardiac conduction abnormalities.

The management of aconite poisoning is primarily supportive as there is no specific antidote. Patients require close monitoring for ventricular arrhythmias which occur most commonly during the first 24 hours following ingestion. In our cases, supportive care with cardiac monitoring and intravenous fluids were sufficient, however, Atropine may be used to treat severe bradycardia. Ventricular arrhythmias may be refractory to several antiarrhythmic agents and in a survey of the literature no antiarrhythmic agents have demonstrated clear superiority. However the use of amiodarone, flecainide, procainamide, epinephrine, and magnesium sulphate have all reportedly met some success although it is not certain whether the drug treatment influenced the ultimate course of the dysrhythmia[9-11].

CONCLUSIONS

This case series illustrates the risk of aconite toxicity with the use of traditional medicine in Bhutan. We hope that by the reporting of this case series we will increase awareness about the adverse effects related to traditional medicine among health workers, eventually leading to the early diagnosis and initiation of effective care in this potentially lethal and common toxicity.

REFERENCES

1. Ministry of Health., Annual Health Bulletin, 2016; Thimphu (Bhutan). 86. [Full Text]
2. McKay A, Wangchuk D. Traditional medicine in Bhutan. Asian Medicine. 2005;1(1):204-18. [Full Text]
3. Ma L, Gu R, Tang L, Chen ZE, Di R, Long C. Important poisonous plants in Tibetan ethnomedicine. Toxins (Basel). 2015 Jan 14;7(1):138-55. [Full Text | DOI]
4. Chan TYK. Incidence and causes of aconitum alkaloid poisoning in Hong Kong from 1989 to 2010. Phytother Res. 2015 Aug;29(8):1107-11. [Full Text | DOI]
5. Lin CC, Chan TY, Deng JF. Clinical features and management of herb-induced aconitine poisoning. Ann Emerg Med. 2004;43(5):574-9. [Full Text | DOI]
6. Li H, Liu L, Zhu S, Liu Q. Case reports of aconite poisoning in mainland China from 2004 to 2015: A retrospective analysis. J Forensic Leg Med. 2016 Aug; 42:68-73. [Full Text | DOI]
7. Menjong Sorig Pharmaceuticals, Department of Traditional Medicine Services, Ministry of Health. Monograph on Traditional Medicine of Bhutan. Bhutan: Ministry of Health; 2015.
8. Brent Furbee, Neurotoxic Plants. In: Michael R. Dobbs, editor. Clinical Neurotoxicology. Philadelphia: W. B. Saunders. 2009. p. 523-42.
9. Lin CC, Chan TY, Deng JF. Clinical features and management of herb-induced aconitine poisoning. Ann Emerg Med. 2004 May;43(5):574-9. [Full Text]
10. Chan TY. Aconite poisoning. Clinical Toxicology. 2009;47(4):279-85. [Full Text]
11. Coulson JM, Caparrotta TM, Thompson JP. The management of ventricular dysrhythmia in aconite poisoning. Clin Toxicol (Phila). 2017 Jun;55(5):313-21.[Full Text | DOI]