ISSN 2456-3110
Vol 9 · Issue 4
April 2024

JAiMS
INTERNATIONAL

Journal of Ayurveda and Integrated Medical Sciences

www.jaims.in

JAIMS

An International Journal for Researches in Ayurveda and Allied Sciences

Maharshi Charaka
Ayurveda

Indexed

Journal of
Ayurveda and Integrated Medical Sciences
ISSN 2456-3110
CASE REPORT April 2024

An Atypical Case Report - *Strychnos nux-vomica* toxicity resulting from *Vishtinduk Vati* overdose linked with bradycardia

Khushali S. Shroff[1], Abhaychandra S. Inamdar[2]

[1]*Post Graduate Scholar, Dept. of Kayachikitsa, Tilak Ayurved Mahavidyalaya, Pune, Maharashtra, India.*

[2]*Associate Professor, Dept. of Kayachikitsa, Tilak Ayurved Mahavidyalaya, Pune, Maharashtra, India.*

ABSTRACT

Strychnos nux-vomica, commonly known as poison nut, is a plant notorious for its toxic alkaloids, particularly strychnine and brucine. While cases of poisoning from *nux-vomica* ingestion have been documented, its occurrence following *Vishtinduk Vati* overdose is exceedingly rare. Here a case of a 55-year-old female with a known history of osteoarthritis who inadvertently overdosed on *Vishtinduk Vati*, an over-the-counter *Ayurvedic* medicine containing *nux-vomica*, in an attempt to alleviate her pain, led to severe poisoning characterized by classical symptoms of strychnine toxicity, including muscle twitching, vomiting and bradycardia, necessitating immediate medical intervention. This case highlights the dangers of self-medication with herbal remedies and the accessibility of potentially harmful over-the-counter *Ayurvedic* medications. It underscores the importance of healthcare providers opting for safer drug choices in daily practice and advocating against the indiscriminate use of herbal supplements, emphasizing the need for regulation and education to prevent such adverse outcomes.

Key words: *Strychnos nux-vomica, Strychnine toxicity, Kuchla, Kupilu, Vishtinduk Vati, ADR*

INTRODUCTION

There is a widespread misconception among the public that *Ayurvedic* medications are inherently safe and do not pose risks of adverse reactions. Over 70% of *Ayurvedic* drug sales occur over-the-counter (OTC), leading to their use without proper prescription, guidance, or oversight from Ayurvedic practitioners.[1] Various poisonous plants, such as *Ahiphena, Bhanga, Dhattur, Karavira, Kupilu, Langali, Vatsanabha, Jayapal,* among others, are utilized in *Ayurvedic* medicine. According to Ayurvedic principles, even potent poisons can be beneficial if administered correctly, while otherwise beneficial medicines can have adverse effects if handled improperly.[2]

Unexpected adverse reactions can stem from various factors, including accidental consumption of poisonous herbs or medicines, misidentification of herbs leading to the use of toxic varieties, inadequate purification of poisonous ingredients, overdose, irrational prescribing practices, self-medication, and interactions with allopathic drugs.

Kuchla based *Ayurvedic* medicines are frequently employed by *Ayurvedic* practitioners in primary healthcare settings, mainly for their analgesic, anti-rheumatic, appetizing, and digestive properties.

Management of *Strychnos* overdose primarily involves supportive measures, such as immediate attention to vital functions and close monitoring of blood pressure and cardiac rhythm. Inotropic therapy may be necessary if hypotension persists, and atropine is typically administered to address bradycardia.[3]

Address for correspondence:
Dr. Khushali S. Shroff
Post Graduate Scholar, Dept. of Kayachikitsa, Tilak Ayurved Mahavidyalaya, Pune, Maharashtra, India.
E-mail: shroff.khushali4@gmail.com

Submission Date: 13/02/2024 Accepted Date: 25/03/2024

Access this article online

Quick Response Code

Website: www.jaims.in

DOI: 10.21760/jaims.9.4.43

ISSN: 2456-3110 CASE REPORT April 2024

This report details a case of hypotension and bradycardia resulting from an overdose of a *Kuchla*-based *Ayurvedic* medication - *Vishtinduk Vati*.[4]

Materials and Methods

The *Bruhattrayi* and *Laghuttrayi*, modern medical textbooks, journals and online databases like PubMed, Dhara, Google Scholar etc were reviewed for this purpose.

Case Report

55 years old female patient with known case of osteoarthritis presented with acute onset myalgia, generalized weakness, giddiness, tingling numbness over upper extremities, nausea and 2 episodes of vomiting. She gave history of consumption of 6 tablets of *Vishtinduk Vati* in a day, around 4 tablets after 6pm in the evening for her knee joint pain before going to sleep. Following 1-2 hours of consumption, she had induced a few episodes of small volume non-bilious vomiting and within hours of consumption, she began to develop twitching movements of the arm and forearm muscles that were more pronounced in her sleep.

On arrival to Emergency Department, she was apprehensive and restless. Along with moderate muscle tenderness over the calf and thighs.

O/E

- **P -** 48/min
- **BP -** 60/40mmHg
- **RR -** 16/min
- **Lab reports -** CBC, RFT, LFTs - normal, serum sodium of 144 mEq/L, serum potassium of 4.7 mEq/L and serum calcium 10.1 mEq/L
- **Urgent electrocardiogram (ECG)** showed sinus bradycardia with non-significant ST-T changes in inferior leads.

The patient's vitals were closely monitored. She was kept on maintenance intravenous fluids and anti-emetics for her vomiting while her urine output was closely monitored. For her hypotension she was started on Inj. Dopamine infusion initially, which was tapered off after rise in BP. She was given Inj. Atropine 1 ampoule diluted in 10 cc NS as and when required for bradycardia <50 beats/min. The levels of serum sodium, potassium and calcium were periodically monitored. Due to her prolonged bradycardia, she was taken on continuous Atropine infusion on Day 2 (eventually tapered off by the end of the day). After that her condition becomes better with minimum to no muscle twitching and no vomiting. She was discharged on day 5.

Vishtinduk Vati[4]

Fig. 1: Showing *Kuchla* seeds

Fig. 2: Showing *Vishtinduk Vati*

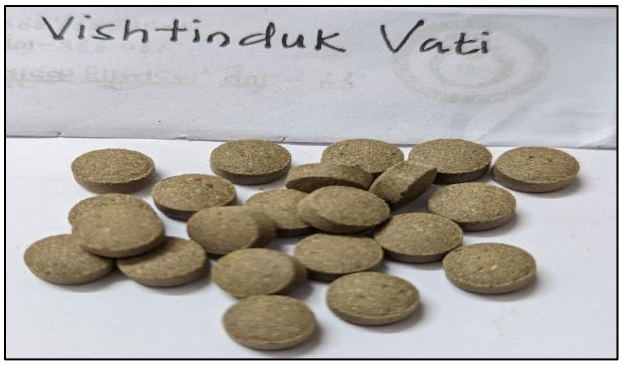

Table 1: Showing properties of contents of *Vishtinduk Vati*[6]

Content	Properties	*Karma*	Other Indications
Shudha Kupilu/Kuchla	*Rasa - Tikta, Katu*	Reduces *Kapha*	*Hanti Meda, Krumihara, Shwashara, Gulmahara,*

ISSN: 2456-3110 CASE REPORT April 2024

(*Strychnous nux-vomica*)	*Guna* - *Ruksha, Laghu, Tikshna* *Virya* - *Ushna* *Vipaka* - *Katu*	Pacifies *Vata* aggravation associated with *Kapha* Increases *Pitta*	*Arshohara, Mushikavishhara, Vishthambi, Rochana, Agnikrut, Grahi, Kushthahara, Pramehajit, Madakrut, Kanthamayahara*

Kupilu/Kuchla[5]

Pharmacological actions: The seeds of the *Kupilu* tree are highly bitter and poisonous due to the presence of strychnine, a potent toxin. Nearly all parts of the tree contain some level of toxicity, but the seeds are particularly dangerous as they contain the alkaloids Strychnine, Brucine and Loganin.

Classical Categorization: *Bhavprakash Nighantu - Amradi Varga*

Mechanism of Action

- Stimulates CNS, especially spinal cord cells, increasing reflex sensitivity. Minor stimuli like noise or light induce muscle contractions.
- Brucine has similar but milder effects. While Loganin present is insufficient for toxicity.

Signs & Symptoms: Bitter taste, Twitching and stiffness of muscles, Strychnine convulsions.

Fatal dose: 1-2 crushed seeds (15-30mg of strychnine)

Fatal period: 1-2 hours

Cause of death in case of Strychnine poisoning: Medullary paralysis, Asphyxia due to spasm of respiratory muscles, Exhaustion.[6,7]

Therapeutic uses

The seeds are only utilized after undergoing a thorough purification process outlined in classical texts. When properly prepared, they are used internally to address various digestive issues and related disorders caused by indigestion or weak digestive function. The seeds serve as a potent remedy for digestive ailments, nerve-related disorders, rheumatism, cough, loss of appetite, hemorrhoids, worms, general weakness, fever, paralysis, colic, gout, ulcers, insomnia, cramps, skin ailments, and age-related conditions. However, excessive or prolonged usage can lead to convulsions.

Discussion

The symptoms of poisoning manifested as a result of an overdose of *Vishtinduk Vati*, with the patient having ingested a quantity exceeding the recommended safe dosage. Since the primary component of the formulation is *Kuchla* (*Strychnous nux-vomica*), its clinical manifestations were observed.

Strychnine poisoning is known to occur after transdermal, oral, inhalational, or injectable exposure to the toxin.[8] Following exposure, strychnine is absorbed rapidly and clinical features appear within minutes to hours based on the route of exposure. Strychnine primarily acts on the central nervous system as a competitive antagonist on the postsynaptic glycine receptors leading to the loss of inhibitory effect of the spinal interneurons on the muscles causing twitching, muscle spasms and seizures. Like tetanus, these spasms can also be provoked with minimal stimulation.[9] Other complications in severe poisoning include lactic acidosis, hyperthermia, and rhabdomyolysis.[8] The cardiovascular effects due to strychnine are usually tachycardia, hypertension, and feeble pulse. As studied in experimental animals, there is an increase in blood pressure and increase in heart rate as a result of inhibition of the pathways that inhibit the central vasomotor outflow.[11] Although strychnine inhibits the spinal sympathetic outflow to the heart,[12] this peripheral action of strychnine is less predominant than the central action on the vasomotor outflow.[11] However, rarely bradycardia and hypotension have also been reported.[10] Other causes of bradycardia in strychnine poisoning that manifest with ECG changes are nonspecific ST-T changes along with QRS and QTc prolongation secondary to hypocalcemia.[10] Hypokalemia has also been reported with strychnine poisoning[10] which may contribute to bradycardia. In this patient, hypocalcemia and hypokalemia were ruled out. This patient neither had any previous known cardiovascular comorbidity nor was she on any cardiac drugs. Co-poisoning with other plant cardiac glycosides was ruled out. A bedside echocardiogram ruled out any evidence of structural heart disease.

ISSN: 2456-3110 CASE REPORT April 2024

Moreover, despite the patient having severe clinical symptoms, she did not display any of the above-mentioned complications associated with strychnine poisoning. Overall, she experienced a favorable outcome after receiving symptomatic management along with analgesics.

The crucial focus of this discussion lies in the unrestricted availability of highly potent *Ayurvedic* medications over the counter, leading to self-medication by patients and resulting in medical emergencies. In contrast to allopathic medicines, which are regulated under Schedule H and require a doctor's prescription, *Ayurvedic* medicines are often freely available without such restrictions. Implementing similar policies for *Ayurvedic* medications is imperative.

Another significant aspect deserving attention is the selection of drugs for pain management. Despite the availability of other potent options such as *Guggulu Kalpas*, many practitioners still resort to highly toxic drugs for pain management in their daily practice. However, it is essential to use these drugs judiciously and inform patients about their potential adverse effects. Misleading advertisements by some drug companies claiming that *Ayurvedic* drugs have no side effects further underscore the importance of educating patients about possible adverse drug reactions (ADRs) before consumption.

Furthermore, it is crucial for more doctors to share their experiences with ADRs to assist new practicing *Vaidyas* in avoiding such mistakes. This will contribute to the advancement of research-based, evidence-based Ayurvedic practices, thereby enhancing patient care and safety.

Conclusion

In conclusion, this atypical case report underscores the potential dangers associated with the overdose of *Ayurvedic* medications containing *Strychnos nux-vomica*, exemplified by the adverse effects experienced by the patient after consuming *Vishtinduk Vati*. The manifestation of bradycardia in this case further emphasizes the need for caution when using such herbal remedies, especially considering their unrestricted availability and potential for self-medication. While the patient's condition was managed successfully with symptomatic treatment, the incident highlights the necessity for stricter regulation and education regarding the use of Ayurvedic medications. Additionally, it prompts a call for more research and evidence-based practices to ensure patient safety in the realm of traditional medicine. Overall, this case serves as a reminder of the importance of informed decision-making and vigilant monitoring in the administration of herbal remedies.

References

1. Thatte UM, Rege NN, Phatak SD, Dahanukar SA. The flip side of Ayurveda. Journal of postgraduate medicine. 1993 Oct 1;39(4):179-82.
2. Panda AK, Debnath SK. Overdose effect of aconite containing Ayurvedic medicine (Mahashankha Vati). International journal of Ayurveda research. 2010 Jul;1(3):183.
3. Sastri A. In Sri Vagbhattachary's Rasaratna Samuchchaya. and editor: Kaviraj Sri A Sastri. 19786th Varanasi: Chowkhamba Sanskrit Series Office. 1978;590.
4. Chunekar, K. C. (2015). Bhav Prakash Nighantu. Hindi Edition. Amraphaladi Varga.
5. Singhal, S. K. (2006). Toxicology at a Glance (9th ed.). National Book Depot
6. https://www.easyayurveda.com/2014/01/08/kupilu-*nux-vomica*-uses-dose-purification-side-effects/
7. Lavekar, G. S. Database on Medicinal Plants Used in Ayurveda and Siddha. Vol-5. New Delhi: CCRAS; Reprint 2008:140.
8. Boyd RE, Brennan PT, Deng JF, Rochester DF, Spyker DA. Strychnine poisoning. Recovery from profound lactic acidosis, hyperthermia, and rhabdomyolysis. Am J Med 1983; 74:507
9. Dickson E, Hawkins RC, Reynolds R. Strychnine poisoning: An uncommon cause of convulsions. Aust N Z J Med 1992; 22:500-1.
10. Bateman DN, Jefferson RD, Thomas SH, Thompson JP, Vale A. Oxford Desk Reference: Toxicology. USA: Oxford University Press; 2014. p. 261, 433.

ISSN: 2456-3110 **CASE REPORT** April 2024

11. Sofola OA, Odusote KA. Sympathetic cardiovascular effects of experimental strychnine poisoning in dogs. J Pharmacol Exp Ther 1976; 196:29-34.

12. Hong YG, Yashpal K, Henry JL. Cardiovascular responses to intrathecal administration of strychnine in the rat. Brain Res 1989; 499:169-73.

How to cite this article: Khushali S. Shroff, Abhaychandra S. Inamdar. An Atypical Case Report - Strychnos nux-vomica toxicity resulting from Vishtinduk Vati overdose linked with bradycardia. J Ayurveda Integr Med Sci 2024;4:270-274.
http://dx.doi.org/10.21760/jaims.9.4.43

Source of Support: Nil, **Conflict of Interest:** None declared.

****

Copyright © 2024 The Author(s); Published by Maharshi Charaka Ayurveda Organization, Vijayapur (Regd). This is an open-access article distributed under the terms of the Creative Commons Attribution License (https://creativecommons.org/licenses/by-nc-sa/4.0), which permits unrestricted use, distribution, and perform the work and make derivative works based on it only for non-commercial purposes, provided the original work is properly cited.