Clinical side effects after oral administration of palm oil and *Alchornea cordifolia* decoction in a child

Paulo Muntu Bunga,[1] Jephté Bambi Nzita,[1] Gerry Mubungu,[1] Sophie Nyembo Mangaza,[1] Nono Joelle Seudjip,[2] Michel Ntetani Aloni[1]

[1]Department of Pediatrics; [2]Department of Dermatology, University Hospital of Kinshasa, School of Medicine, Kinshasa, Democratic Republic of Congo

Abstract

Alchornea cordifolia is known to be a plant with a variety of medicinal properties and is quoted by many traditional healers to treat a variety of medicinal problems in the Democratic Republic of Congo. However, very little is known about its potential toxicity. We report the case of a 9-year-old boy referred for assessment of suspected bronchial troubles without a history of atopic disease or drug allergy who developed dyspnea, dysphagia, asthenia and lingual ulcers within 30 minutes after nasal and oral administration of decoction of palm oil associated with *A. cordifolia* leaves in water. In the present report, adverse effects of *A. cordifolia* therapy may be related to the mixtures of active compounds that they contain and can cause the symptoms observed in our patient. These findings call for caution in the use of *A. cordifolia* especially in children.

Correspondence: Paulo Muntu Bunga, Department of Pediatrics, University Hospital of Kinshasa, School of Medicine, P.O. Box 123, Kinshasa, Democratic Republic of Congo.
Tel.: 00.243.8150019160.
E-mail: pbungam@yahoo.fr

Key words: *Alchornea cordifolia*; Medicinal plants; Child; Kinshasa; Democratic Republic of Congo.

Contributions: PMB, JBN and MNA prepared initial draft of the manuscript and revised all subsequent versions. PMB, JBN, SNB, GM, NLS and JM provided care and follow-up data for the case, and reviewed the early versions of the manuscript. PMB, JNB and MNA proposed the key message of the manuscript, and provided critical input to the revisions of all versions of the manuscript. All authors read and approved the final manuscript.

Conflict of interest: the authors declare no potential conflict of interest.

Funding: none.

Acknowledgements: the authors would like to thank the Pediatric and Dermatology day care team at the University Hospital of Kinshasa for their invaluable help in managing this patient.

Received for publication: 3 April 2017.
Revision received: 17 March 2018.
Accepted for publication: 19 March 2018.

La Pediatria Medica e Chirurgica 2018; 40:152
doi:10.4081/pmc.2018.152

Introduction

Alchornea cordifolia belongs to the family *Euphorbiaceae*, grows as a shrub or small tree and is distributed throughout tropical Africa in secondary forests, usually near water or marshy places. *A. cordifolia* have been used for centuries by many traditional healers to treat a variety of medicinal problems in the tropics area.[1] In central Africa, gastrointestinal disorders, rheumatism, toothache, wound, fever symptoms, cough and various pain are treated by this herb.[2] However, despite the widespread traditional use of *A. cordifolia* in tropical countries, little is known regarding potential toxicity of plants belonging to the *Euphorbiaceae* family such as *A. cordifolia* in human beings. A case of a child seen in our institution (University Hospital of Kinshasa, Kinshasa, Democratic Republic of Congo) necessitated a literature review and a report.

Case Report

A 9-year-old boy was referred for assessment of suspected bronchial troubles. The history of present illness dates back about 24 hours characterized by rapid onset of dyspnea, dysphagia, and asthenia within 30 minutes after nasal and oral administration of decoction of palm oil associated with *A. cordifolia* leaves in water by his mother. He had no medical history of atopic disease or drug allergy. He is first in a family of two children. He wasn't taking any medication. No findings suggest a particular risk period or an environment exposure.

At presentation, physical examination revealed agitation, tachycardia, respiratory distress, lingual ulcers (upper surface of the tongue) and bronchial wheezing. There was no fever and no enlargement of spleen or liver. Full blood count demonstrated leukocytosis (12.2×10^9/L) with neutrophil (9.15×10^9/L), lymphocytes (2.28×10^9/L) no monocytes and basophils (0%), moderate anemia (Haemoglobin- 9.1 g/dL), bicarbonate (20 mmol/L).

During his hospitalization, the child received specific treatment for the disease associated oxygenotherapy (2×1 application/day/7 days), aqueous eosin at 2 (2×1 application: day/7days), Celestène (5mg/5 mL: 5mL/day/3 weeks), hexetidine (2×1

application/day/7days), baking soda (2×1 application/day/5 days) and Xylocaïne gel (2×1 application/day/7 days). All symptoms and signs disappeared after the treatment.

Discussion and Conclusions

In Democratic Republic of Congo and especially in Kinshasa region, *A. cordifolia* is known to be a plant with a variety of medicinal properties, and is quoted by many Congolese traditional healers for his rich medicinal value, mainly due to its antidiarrheal agents, antibacterial, antiamoebic, analgesic and antispasmodic properties, antiprotozoal activity against *Trypanosoma brucei brucei*, antiplasmodial activity against *Plasmodium falciparum*, febrile convulsions, local treatment of ulcers, rheumatic pains.[2] The ethanol extract and chebulagic acid of the *A. cordifolia* contained bioactive ingredients showing the properties to inhibit the growth of common pathogens, antiprotozoal activities, and anti-inflammatory properties in Central African studies.[2-4] All these properties could explain some of the therapeutic benefits attributed to the plant in traditional medicine, in our midst.

Many medicinal herbs and pharmaceutical drugs are therapeutic at one dose and toxic at another. In Kinshasa, traditional herbal remedies are still frequently used by oral administration or local treatment. However, little is known regarding the adverse effects of *A. cordifolia* and any case of intoxication could be found with the use of available computer-assisted medical literature search programs. In a previous study, the effect of oral administration of the methanol extract showed that *A. cordifolia* leaves has toxic potential at high dose on hepatic and renal functions.[5] Most reports concerning phytochemical screening of *A. cordifolia* extracts revealed the presence of tannins, phenols, flavonoid, alkaloids and saponins.[6] Accidental herbal toxicity occurs not only as a result of a lack of pharmaceutical quality control in harvesting and preparation, but also because herbal remedies are believed to be harmless. Each practitioner has his own methods of preparation, following the cause of disease, his parent or ethnic's tradition in Democratic Republic of Congo.[7]

In the present report, adverse effects of *A. cordifolia* therapy may be related to the mixtures of active compounds that they contain and can cause the symptoms observed in our patient. However, clinical features due to *A. cordifolia* therapy are rarely reported in human to compare clinical and laboratories features. The assumption that herbal medicines are safe is these assertions are contradicted by recent clinical trials in mice.[8,9]

For this reason, clinical toxicity to *A. cordifolia* should be taken into consideration in follow-up and diet education. These findings call for caution in the use of *A. cordifolia*, especially in children.

References

1. Adeshina GO, Jegede IA, Kunle OF, et al. Pharmacognostic studies of the leaf of Alchornea cordifolia (Euphorbiaceae) found in Abuja Nigeria. J Pharm Sci 2008;7:29-35.
2. Mesia GK, Tona GL, Nanga TH, et al. Antiprotozoal and cytotoxic screening of 45 plant extracts from Democratic Republic of Congo. J Ethnopharmacol 2008;115:409-15.
3. Mavar-Manga H, Haddad M, Pieters L, et al. Anti-inflammatory compounds from leaves and root bark of Alchornea cordifolia (Schumach. & Thonn.) Mull. Arg. J Ethnopharmacol 2008;115:25-9.
4. Pompermaier L, Marzocco S, Adesso S, et al. Medicinal plants of northern Angola and their anti-inflammatory properties. J Ethnopharmacol 2018;216:26-36.
5. Ajibade TO, Olayemi FO. Reproductive and toxic effects of methanol extract of Alchornea cordifolia leaf in male rats. Andrologia 2015;47:1034-40.
6. Adeshina GO, Onaolapo JA, Ehinmidu JO, et al. Phytochemical and toxicologic activity of the leaf extracts of Alchornea cordifolia (Schum and Thonn) Muell. Arg. (Euphorbiaceae) Nigerian J Pharmacol Res 2007;6:19-24.
7. Okombe Embeya V, Lumbu Simbi JB, Stévigny C, et al. Traditional plant-based remedies to control gastrointestinal disorders in livestock in the regions of Kamina and Kaniama (Katanga province, Democratic Republic of Congo). J Ethnopharmacol 2014;153:686-93.
8. Osadebe PO, Okoye FB, Uzor PF, et al. Phytochemical analysis, hepatoprotective and antioxidant activity of Alchornea cordifolia methanol leaf extract on carbon tetrachloride-induced hepatic damage in rats. Asian Pac J Trop Med 2012;5:289-93.
9. Effo KE, Kouakou-Siransy G, Irie-Nguessan G, et al. Acute toxicity and antipyretic activities of a methanolic extract of Alchornea cordifolia leaves. Pharmacol Pharm 2013;4:1-6.