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A Fatal Case of Chenopodium Ambrosioides Poisoning

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Abstract **Case Report**

Chenopodium Ambrosioides is one of the medicinal plants with a widespread consumption in Morocco. We report here a fatal case of an infant with "M'khinza" poisoning admitted in our department with multiple organs failure. It is recommended for the medical personnel to systematically integrate, in their diagnostic approach, the possibility of direct toxicity by a medicinal plant and for people to raise their awareness against the irrational and abusive use of this plant is highly recommended.

Keywords: Chenopodium Ambrosioides.

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INTRODUCTION

Chenopodium ambrosioides, known in Morocco by "M'khinza", is used in the folk medicine as analgesic, antipyretic, antioxidant and to cure gastrointestinal disease. However, it can be toxic if it is incorrectly calibrated. The adverse effects of its poisoning are digestive (vomiting and epigastric pain) cardiovascular (tachycardia), neurological (headache, convulsions or even coma), renal (acute renal failure), hepatic (liver failure) haemorrhagic and skin (pruritus, purpura).

CASE REPORT

A 3-month-old infant with no medical history was admitted to the pediatric emergency department for respiratory distress 3 days after taking an infusion of "M'khinza" (chenopodium ambrosioides) for a fever with diarrhea.

On admission, he was unconscious and hypotonic. His vital signs were a heart rate of 150 beats/min, a blood pressure of 100/50 mmHg, a respiratory rate of 50 breaths/min, a blood saturation of 80% under 8L oxygen supplement/min, with a fever of 39.5°C. Our decision was to perform an orotracheal intubation.

A cranial CT scan and transcranial Doppler (Figures 1, 2) didn't show any abnormalities. A lumbar puncture was performed to eliminate meningitis, it came back negative. His Chest X-ray (figure 3) didn't explain his respiratory distress.

Laboratory tests showed a kidney injury (creatinine level of 26 mg/l with a clearance of creatinine of 5.9 ml/min), a hepatic injury (alanine transaminase of 460 UI/l, aspartate transaminase of 385 UI/l, gamma-glutamyl. transpeptidase of 82 UI/l, and lactate dehydrogenase of 1830 UI/l), rhabdomyolysis (CPK of 15271 UI/l, CPK mb of 1000 UI/l), a low level of platelets (86 000/ul) and a level of troponin of 0.15 ng/ml. The electrocardiography didn't show any signs of repolarisation and the echocardiography was normal. Urine and blood's dosage of chenopodium ambrosioides weren't performed.

The patient was sedated using an infusion of Midazolam (0.1 mg/kg/h) and Fentanyl (2 µg/kg/h). On the second day, he was off the sedatives but didn't gain consciousness. The course of his stay in the pediatric intensive care unit was noted by a multiple organs dysfunction syndrome leading to his death on the 7th day of his admission.

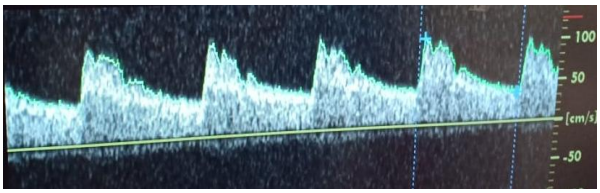

Fig-1: Transcranial Doppler waveform from the right middle cerebral artery (MCA), the end-diastolic flow velocity (EDV) was 36.64 cm/s, the systolic flow velocity was 104.69 cm/s and the PI was 1.05

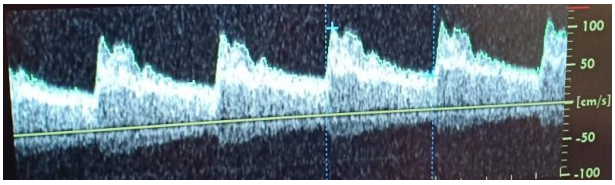

Fig-2: Transcranial Doppler waveform from the left middle cerebral artery (MCA), the end-diastolic flow velocity (EDV) was 44.49 cm/s, the systolic flow velocity was 112.54 cm/s and the PI was 0.94

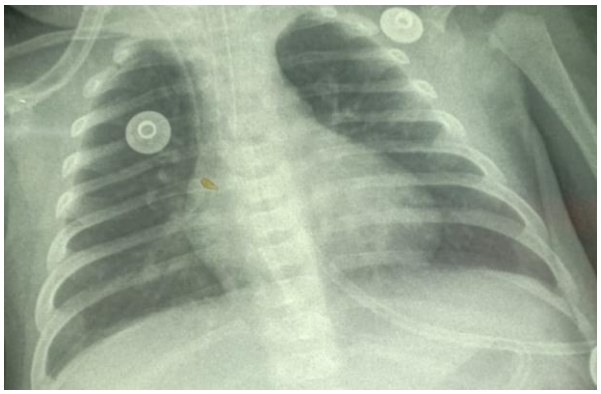

Fig-3: Chest X-ray at admission showing no abnormalities

DISCUSSION

Chenopodium Ambrosioides is used in folk medicine as analgesic, antipyretic, antioxidant and to cure the gastrointestinal disease [1]. Locally known as "M'khinza", this plant is a native of Central and South America and it can grow in other warm or subtropical countries as an invasive weed.

The main compounds of Chenopodium Ambrosioides are carvacrol (62%), ascaridole (22%), and caryophyllene oxide (5%). Other components are present in a percentage lower than 1% (total sum 11%).

Chaoui *et al*. [4] reported a case of a toxic encephalopathy secondary to the excessive ingestion of Chenopodium Ambrosioides in a 6-month-old infant, the cerebral computed tomography showed abnormalities of density in the basal ganglia and pons. The toxic encephalopathy secondary to this plant is rarely reported in the literature; it can be manifested by confusion, behavior disorders, obnubilation, deep coma, or seizures [5]. Our patient was admitted unconscious to the pediatric emergency department. However, his CT-scan didn't show any abnormalities.

Amole *et al*. [6] conducted a study to show that a chronic exposure to Chenopodium Ambrosioides can cause kidney, stomach, and lung injury. 20 male albino rats were administrated with doses of the plant extract for 42 days. At post mortem, the organs were analyzed microscopically; the lungs showed congested vascular channels, there was squamous metaplasia with keratinization in the stomach layers, the tubules of the kidney showed coagulative necrosis and the glomeruli are destroyed and showed hyalinization, the interstitium showed mild infiltration by chronic inflammatory cells and the vessels are congested and the liver was intact. This study could explain why our patient developed a kidney injury with a creatinine level of 26 mg/l, and his respiratory distress.

Derraji *et al*. reported three cases of hepatotoxicity by Chenopodium Ambrosioides, there were not severe like our case, their liver enzymes went to normal values after a few days, he explained the hepatotoxicity by an overdose, inadequate storing or contamination by a fungus such as Aflatoxin [7]. Liver injury was due to plants poisoning in 9% in the US according to Chalasani *et al*. [8] and 2% in Spain according to Garcia *et al*. [9].

Therapeutic management of plant poisoning in the absence of an antidote is essentially based on symptomatic treatment to overcome organs' dysfunction. Not to mention the diagnosis and treatment of the initial symptoms that led to the taking of the plant.

CONCLUSION

Chenopodium Ambrosioides intoxication can be fatal, causing systemic effects. In this case, the patient was admitted with multiple organ dysfunctions with a fatal outcome. This shows the important role of educating parents about the potential danger of using plants in folk medicine and for medical personnel to systematically integrate into their diagnostic approach the possibility of direct toxicity by a plant.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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