

Castor bean poisoning in children

Intoxication aux graines de ricin commun chez l'enfant

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To the editor,

Several plant species are toxic to humans, which can sometimes be life-threatening. Castor oil plant (*Ricinus communis*), a member of the *Euphorbiaceae* family growing in tropical regions of Africa (Figure 1) [1], is extremely dangerous as it produces a toxin called ricin. Several cases of poisoning with this widespread ornamental plant have been reported in adults. Here we describe two separate pediatric cases of accidental poisoning in Morocco with a final favorable outcome.

Two girls, 7 and 10 years old, with no past medical history were admitted comatose to our pediatric intensive care unit (ICU). Both patients suffered from generalized tonic-clonic seizures prior to admission. They presented significant hypotension, tachycardia, tachypnea, and unconsciousness (Glasgow coma scores of 8 and 11, respectively). They were afebrile. They had symmetric and reactive pupils with no focal neurological deficit. Their respective families reported the sudden onset of vomiting and abdominal pain about two hours after the ingestion of beans, identified as castor beans by our medical team. The 7-year-old patient was promptly intubated, and both received anticonvulsant therapy. Gastric lavage brought back non-chewed beans. Brain CT scan and laboratory tests were unremarkable, except mild liver cytolysis. Outcome was favorable with ICU discharge on day 3.

The whole plant of *Ricinus communis* is toxic due to the presence of ricin [2]. Ricin is composed of two peptides linked by a disulfide bond: the B chain allowing the toxin to bind to the cell membrane and the A chain responsible for the inhibition of protein synthesis and cell death. Poisonings

have been reported after ingestion of castor beans but also after inhalation, subcutaneous, intramuscular, and intravenous injections of ricin [3]. Ricin has also been used for criminal purposes and as a biological weapon. Following ingestion, poisoning severity depends on whether the beans are chewed or not [2]. It is believed that three beans can kill a child, four can cause serious symptoms, and six to eight can be fatal in adults.

After bean ingestion, symptoms usually appear within 3–6 h, but may be delayed till a few days in exceptional cases [3,4]. Vomiting, bloody diarrhea, and abdominal cramps are the most common symptoms resulting in dehydration and hypotension. Neurological symptoms (cramps, muscle weakness, altered consciousness, and convulsions) rather result from massive water and electrolyte loss. Depending on severity, hemoconcentration, hyponatremia, hypokalemia, leukocytosis, hypoglycemia, and hyperbilirubinemia have been



Fig. 1 *Ricinus communis* (1A) and castor beans (1B)

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reported [4]. Liver, kidney, and adrenal gland damage occur secondarily, usually 2–5 days after exposure. Death results from refractory hypovolemic shock. Diagnosis is based on history, and the assessment is based on ricin detection or concentration measurement in plasma and urine [4]. Such measurements were not performed in our cases as these were not available in Morocco. Treatment is supportive. No antidote is available, since therapeutic monoclonal antibodies against ricin are still in experimental stage [5,6]. Thus, to date, patient education is essential to prevent this potentially fatal accidental poisoning in children.

Conflict of interest : none.

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