Jatropha Poisoning in Children

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Introduction

Jatropha curcas commonly known as Ratanjyot or Jungli erandi (Fig.1) is an evergreen plant found throughout India especially in southern parts. Traditionally it has been used for medicinal purposes but in recent times it is being promoted as bio-diesel fuel. Cases of Jatropha poisoning have been reported from different parts of India due to ingestion of the seeds of this plant. Children are particularly susceptible to it. We report four children who presented with Jatropha poisoning.

Case Report

Four children (age group of 5-8 years) were brought to accident and emergency dept with complaints of repeated vomiting and pain abdomen. One of the affected children had diarrhoea. On examination their vital parameters were stable. There were no signs of dehydration. One of the children had constricted pupils raising a doubt of organophosphorus poisoning. The children denied consuming any liquid chemical.

On further questioning, the children brought out history of consumption of some black coloured seeds which were growing around the school premises. On examination these seeds were identified to be of *Jatropha curcas*. The reasons for ingestion were curiosity and sweet taste of the seeds. The lag period before onset of symptoms varied between one to two hours. All the children were given gastric lavage followed by antiemetics and IV fluids.

Their symptoms subsided within 6-8 hours. They were observed for 24 hours and discharged the next day.

Discussion

Jatropha curcas is a common plant found all over the world. It is cultivated in almost all tropical and subtropical countries as protection hedges around gardens and fields, since it is not browsed by cattle. In spite of its ubiquity and propensity to cause many adverse effects on accidental consumption, not much information about this

plant is available in leading toxicology and forensic medicine books [1-3].

The leaves of Jatropha are lobed, green and smooth. The flowers are small, yellow and mostly hidden by the leaves. The stem is thick, green, glabrous becoming woody at the base. *Jatropha curcas* seeds resemble castor seed in shape and are black in colour. The fruit has three chambered green capsule with three single seeded cocci. The seeds become mature, when the capsule changes from green to yellow.

The Jatropha seeds are touted as a treatment of cold sweats, colic, cramps, constipation etc in villages. Jatropha seed oil is currently being tried as a biofuel. The Central Salt and Marine Chemicals Research Institute (CSMCRI), a Government-owned industrial research institute, is aiming to cultivate Jatropha plant for the production of biodiesel [4]. Despite its medicinal uses, the plant is harmful due to presence of toxalbumin called curcin, ricin and cyanic acid, related to ricinoleic acid. Ricin has been shown to exhibit many cardiotoxic and haemolytic effects. Though all parts of the plant

Fig. 1 : Jatropha plants and seeds

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are poisonous, seeds have the highest concentration of ricin and thus very poisonous [5]. The adverse effects following consumption of seeds include vomiting, diarrhoea, abdominal pain and burning sensation in the throat. Vomiting and diarrhoea can set in within fifteen minutes of consumption. Acute abdominal pain is experienced about half an hour after the ingestion of the seeds. Depression and circulatory collapse have also been reported and are said to be common in children. Although the available literature is scarce, but all the Jatropha poisoning victims reported so far have been in the paediatric age group and all had presented with gastrointestinal manifestations [6-9]. However, Koltin et al [9] reported that miosis is also a presenting sign of Jatropha intoxication. The combination of vomiting, diarrhoea and miosis resembles the clinical presentation of organophosphorus poisoning, which is one important differential diagnosis. Measurement of plasma acetyl cholinesterase activity levels, which is normal after Jatropha ingestion and decreased following organophosphate poisoning, may help differentiate between the two.

The toxic dose is not known. Eating large quantities of any raw part may cause slow damage to kidneys. Though it is commonly believed that roasting detoxifies the seeds but catastrophes have been reported even after eating roasted seeds.

Treatment is essentially symptomatic and supportive. In all cases of ingestion or suspected ingestion, if the child is conscious; induce emesis within 1-2 hours of ingestion with Ipecac syrup or perform gastric lavage. There is no specific antidote. Specific therapy may be indicated for haemorrhagic gastrointestinal damage, skeletal muscle and gastrointestinal spasm, excessive salivary secretions and haemoglobinuria. After substantial exposures to toxalbumin containing plants, minimum observation period of up to 8 hours is advised. IV fluids and electrolyte as necessary to restore and maintain

fluid and electrolyte balance is to be given. Monitoring of renal functions and alkalization of urine is done to minimize effects of haemoglobinuria. Treatment of haemorrhagic gastro-intestinal damage is like that of peptic ulceration. Signs of central nervous system depression are looked for and assisted ventilation is initiated, if necessary.

Though most children who ingest Jatropha curcas seeds do not suffer much harm, health care providers must recognise, assess and initiate appropriate management to minimize the serious consequences that could endanger the lives of the patients.

Conflicts of Interest

None identified

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