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Paediatric Jatropha poisoning: a retrospective study at Government General Hospital, Gulbarga, Karnataka, India

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ABSTRACT

Background: Plant poisonings are one of the significant causes of accidental poisoning among pediatric age group. As jatropha is being increasingly being cultivated in new regions for its economic benefit as a source of biodiesel, accidental poisoning among children are being reported. As with many members of the family euphrobiaceae, Jatropha contains compounds that are highly toxic. Jatropha Curcas is one of the best oil seed plants and identified as most suitable oil seed bearing plant due to its various favorable attributes. The objectives of this study were to determine the spectrum of clinical presentation and morbidity and mortality related to this poisoning.

Methods: Data was collected from January 2012 to December 2013, total 19 cases of Jatropha were examined. Descriptive analyses and measures of central tendency were performed on the demographic data to describe the sample.

Results: Overall 78 % of children presented with vomiting, pain abdomen and loose stool, while 15% were admitted with only complaints of vomiting, furthermore only 5 % had both symptoms of vomiting and loose stools. There was no mortality related to Jatropha poisoning out of 19 cases.

Conclusions: In recent years there are increasing number of children being admitted to hospital with accidental ingestion of Jatropha seeds. Like in other reported studies present patients had predominant gastrointestinal symptoms and recovered well with supportive measures. There were no mortality or complications in present patients. Extensive awareness among the rural community and medical fraternity alike is needed about this potential lethal plant poison.

Keywords: Jatropha, Loose stools, Poisoning, Vomiting

INTRODUCTION

Plant poisonings are one of the important causes of accidental poisoning among pediatric age group. As jatropha is being increasingly being cultivated in new regions for its economic benefit as a source of biodiesel, accidental poisoning among children are being reported. Jatropha plants belong to the family of Euphorbiaceae and genus of Jatropha L. As with many members of the family Euphrobiaceae, Jatropha contains compounds that

are highly toxic. *Jatropha curcas* is one of the best oil seed plants and identified as most suitable oil seed bearing plant due to its various favorable attributes.

As a source of high-quality biodiesel its cultivation is being encouraged by government through our India. Jatropha farming is profitable as there is a huge demand for mass production of seeds for biodiesel. In India, Jatropha is grown in almost all states of India as a live fence for protection of agricultural crops from being

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damaged by cattle, goat or sheep, as these animals do not eat Jatropha plants.

Children due to their curious nature are prone for accidental poisoning. The type of poisoning varies from place to place.³ Authors at ESIC medical college Gulbarga came across a series of cases of accidental poisoning due to *Jatropha curcas*. Children consumed these seeds as they resemble fresh ground nut seeds and have sweetish taste. This retrospective study was done to understand the clinical presentation, complications, morbidity and mortality among these children admitted to Government General Hospital (teaching hospital for ESIC Medical College), Gulbarga.

METHODS

All cases of poisoning admitted to Department of Pediatrics between January 2012 to December 2013 at Government District hospital, Gulbarga were reviewed. Among cases of poisoning, 19 cases were due to accidental ingestion of Jatropha seeds. Details of individual cases were recorded in the proforma. Data was analyzed with respect to symptoms of presentation, signs at the time of hospitalization, any complications, time to recovery and management details.

Inclusion criteria

Child with poisoning admitted with

- nausea,
- vomiting,
- abdomen pain,
- loose stools,
- dehydration,
- altered sensorium,
- hypoglycemia,
- · altered liver and
- renal functions.

Exclusion criteria

 Suspected organophosphate poisoning cases, other plants poisoning who are severely ill.

RESULTS

A total of nineteen cases of Jatropha poisoning were admitted to pediatrics department between January 2012 to December 2013. All cases were due to accidental ingestion of Jatropha seeds. Children had consumed these seeds out of curiosity and the resemblance of Jatropha seed's color and texture to fresh groundnuts. These nineteen cases were admitted in three groups. As there was no immediate discomfort after consumption, its sweetish taste and resemblance of Jatropha seeds to fresh groundnut seeds contributed to consumption happening in groups. All the cases of poisoning were seen in school

going children or their younger sibling between the ages of 2 years to 10 years of age. The first two groups had come with the specimen of plant fruit and seeds consumed. The third group poisoning was suspected in view of typical presentation (consumption of wild plant seeds and clinical presentation) and parents identifying the specimen kept in department. Out of nineteen cases admitted 13 cases were female and 6 cases were male children (Figure 1).

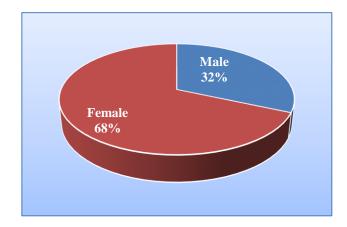


Figure 1: Children with Jatropha poisoning.

The predominant presenting complaints were recurrent vomiting followed by crampy abdominal pain and loose stools (Figure 3). Three cases had only vomiting. No one had icterus or altered urine color.

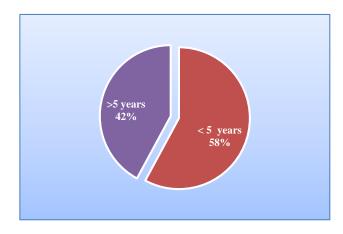


Figure 2: Children age admitted with Jatropha poisoning.

Sixteen out of nineteen cases came in dehydration requiring fluid resuscitation. The other three were managed with antiemetic and oral rehydration solution. Rapid improvement was seen in majority of the children following initiation of treatment.

Nine cases were discharged after 48 hours after admission. Remaining 10 cases were observed for three days in view of abdominal discomfort and poor appetite and discharged on fourth day.

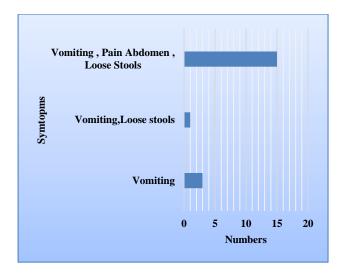


Figure 3: Number of children presented with various symptoms like vomiting, pain abdomen and loose stool due to Jatropha poisoning.

Five out of nineteen cases had mild raise in liver enzymes, however no clinical icterus, tender hepatomegaly was observed in any of the cases. Renal function test was normal in all cases and no ECG changes were noted in any of them. All children recovered completely.

Table 1: Sex wise Distribution of study subjects.

Sex	Number	Percentage
Male	6	31.58
Female	13	68.42
Total	19	100.00

Sex wide distribution of children admitted with Jatropha poisoning, 31.5% were male and 68% were female child (Table 1).

Table 2: Age wise Distribution of study subjects.

Age (months)	Number	Percentage
<5 years	11	57.89
>5 years	8	42.11
Total	19	100.00

Age wide distribution of children admitted with Jatropha poisoning showed, less than 5 years-58 % and more than 5 years 42% cases (Table 2).

Table 3: Distribution study subjects based on their symptoms.

Symptoms	Number	Percentage
Vomiting	3	15.79
Vomiting and loose stools	1	5.26
Vomiting, pain in abdomen, loose stools	15	78.95
Total	19	100.00

Predominantly children had Gastrointestinal symptoms, almost 79 % children presented with vomiting, pain abdomen and loose stool (Table 3).

DISCUSSION

Poisoning due to consumption of Jatropha seeds was unheard of in this part of country a few years back. Even the undergraduate curriculum doesn't mention Jatropha seeds as a potential poison.⁴ So most of the medical graduates lack the knowledge about clinical feature and management of Jatropha seed poisoning. All the cases in this study were managed symptomatically and all had good outcome. However, the review of literature shows jatropha seeds to contain poisonous recin. Various animal studies have shown it to cause many detrimental effects to various vital internal organs. Awasthy et al, have reported deranged renal and liver function along with hypoglycemia in Wistar rats fed with Jatropha seed protein supplement for few days, however none of present cases had hypoglycemia.6 Abdu A et al, have noted death of mice fed with jatropha seeds in their study. Postmortem of these mice revealed infarction of various parts of Gastrointestinal tract.7 Similarly Ahmed OM et al, have studied jatropha seed toxicity in sheep and goat, while there was no mortality due to toxicity of jatropha poisoning cases in present hospital. They have reported diarrhea and dehydration in them, same has been seen in almost 78 % of present cases. They also found hemorrhages' in heart, lungs, kidney, liver and GIT. They also noted hypoproteinemia, edema and straw-colored fluid collection in serous cavities as a toxicity feature of jatropha seeds in sheep and goat, moreover none of present cases had hypoproteinemia.8 Many cases of Jatropha poisoning have been reported from all over the world. Earliest reported cases are from South Africa. Joubert et al, had reported eight cases of accidental poisoning. Five of them required intravenous fluids. Like in present study all had recovered with supportive measures and none had any complication. Levin Y et al, had used alkalization of urine along with fluids as a management strategy. 10 His patients required five days to recover and had altered liver function test. present patients did not require alkalization of urine as non-had clinical features of myoglobinuria and only five of present nineteen cases had altered liver function tests. Raised liver enzymes as a feature in Jatropha poisoning as also been reported in a study published from Thailand by Chulothida et al.¹¹ Unusual feature of miosis as a feature in cases of Jatropha poisoning has been reported by Koltin et al.¹² None of present cases had this feature Many cases have been reported from india also. Viral S et al, had reported five cases who had rapid onset of symptoms following accidental ingestion. All had quick recovery following symptomatic treatment.¹³

CONCLUSION

In recent years there are increasing number of children being admitted to hospital with accidental ingestion of Jatropha seeds. Like in other reported studies present patients had predominant gastrointestinal symptoms and recovered well with supportive measures.¹³ There was no mortality or complications in present patients. Extensive awareness among the rural community and medical fraternity alike is needed about this potential lethal plant poison.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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