Case Report

Paediatric Poisoning Panic and Forensic Toxicologist

[1]MZ Saiyed, [2]S Prajapati, [3]CB Jani, [4]BS Prajapati

Abstract

Poisoning forms a reasonable chunk of morbidity and mortality amongst cases referred to the hospitals in India. Such cases comprise almost all age groups in both genders, but it is always panicking when it is a paediatric patient suffering from any manner of poisoning; most commonly accidental. It is obvious that poisoning cases need more attention so as to check mortality. Poisoning in children by biological plants is not uncommon as children are attracted towards the plants and their colourful fruits while playing. These cases may produce severe symptoms and may prove fatal. We are presenting a case report of a 2½ year old female child who consumed seeds of some plant while playing and suffered with severe vomiting within short duration of its consumption. It created great panic amongst the relatives of the patient as well as treating personnel as identity of the culprit seeds was not established; coupled with the fact that malnourished child was diagnosed to also suffer from some hematological disorder. Present case is a good example of multidisciplinary approach of a poisoning condition of clinical nature and hence discussed in detail.

Key Words*:* Clinical toxicology, Forensic Toxicologist, Paediatric poisoning, Panic

Introduction:

As per National Crime Record Bureau report [1] percentage share of deaths due to poisoning during the years 2012 and 2013 was 7.8% (rate 2.5) and 7.3% (rate 2.4) respectively.

Gunheti & Singh [2] observed 17.33% mortality in poisoning cases at Khammam region of Andhra Pradesh. Acute poisoning form a reasonable chunk among emergency cases brought to any hospital. Such cases comprise of almost all age groups of both genders.

Yadav & Singh [3] in their study in rural area of Haryana observed that "poisoning was the predominant cause (36.90%) out of all medico-legal cases". Distribution of paediatric age group in various studies on poisoning was 1.99% in Khammam region [2], 2% in Uttarakhand [4] and 2.1% in Jamnagar region [5], almost of same range. However, it was reported to be little higher in southwest Punjab region being 6.3% [6] and western Uttar Pradesh as 7.93%. [7]

Corresponding Author:

[1]Assistant Professor,
Dept. of Forensic Medicine & Toxicology
GCS Medical College, Hospital & Research Centre,
E-mail: dr_ziya_saiyed@yahoo.com
[2]Junior Resident, Dept. of Paediatrics
[3]Prof & HOD, Dept. of FMT
[4]Prof & HOD, Dept of Paediatrics
DOR: 03.06.2015 DOA: 04.09.2015
DOI: 10.5958/0974-0848.2015.00113.X

Thus it is obvious that clinical cases of poisoning need more attention with reference to timely diagnosis and treatment so as to check mortality.Paediatric age group is not an exception to it. As poisoning cases of pediatric age group are more accidental as compared to elders; in addition to chemical substance; some biological plants are also responsible for poisoning. Timsinha et al [8] observed 11.81% cases of poisoning in his study at western region of Nepal during the years 2013 and 2014.

They also observed that in 30.75% of all medico-legal cases; opinion of surgery, Orthopedics and Medicine was sought. Surprisingly in two cases only Forensic Medicine department involvement was sought. Present case is a good example of multidisciplinary approach of a poisoning condition of clinical nature and hence discussed in detail.

Case History:

On 12/12/2013 at 6:30 pm, a 2½ year old female patient was brought by parents to GCS Medical College Hospital for treatment of vomiting following accidental ingestion of some seeds around 4:00 pm on same day.

The chief complaint was vomiting, 7-8 times in span of last two and half hours. General examination demonstrated normal vitals but right eye ptosis and squint. Systemic examination was not significant and there were no signs of dehydration. Parents shared history of accidental ingestion of some seeds [fumbling about the name or type and number of seeds -

cotton seeds, Dhatura seeds etc. as they didn't witness!] Looking to the clinical presentation; I/V fluids, Inj. Rantac and Syrup Domstal were administered to control vomiting.

However, attending pediatricians were not able to retrieve the information from parents about nature of seeds consumed and were anxious about further line of management.

In addition, patient was diagnosed to suffer from Protein Energy Malnutrition (PEM grade-III) on Anthropometric evaluation.

Hematological investigations indicated picture of thalasemic nature. This added to anxiety of paediatricians about further course and management. Under the circumstances; as an institutional protocol in medico-legal/potential medico-legal case, Department of Forensic Medicine & Toxicology was consulted.

We shared certain plant images available in books of Forensic medicine & Toxicology to parents and tried to narrow down the search on the type of plant.

They were yet not clear but said that there is a plant 5-6 meter height near their abode having fruits resembling lemon.

They were asked to bring a "sample" of the fruit they referred and worried parents brought the fruit within 15 minutes. The fruit was lemon yellow in colour, ovoid in shape and about 5-6 cm in diameter. The branch had two other fruits in dried condition, open exposing three lobes/compartments with one seed in each.

The seed was oval in shape, brownish in colour with creamish-white upper end. (Fig. 1)

On transverse section of the fruit three lobes/compartment with one seed in each was visible better. The cut section of seed showed creamish white pulp of seed with brownish coloured seed wall. (Fig. 2)

Attending paediatricians were called shown image of Jatropha plant, fruit, seed and cut section of seeds as documented in Textbook of Forensic Medicine and Toxicology [9], (Fig. 3).

It was very much convincing to them that they are dealing with no other seeds but jatropha. It was also made clear that the active principle curcin is a plant irritant which can produce signs and symptoms as burning sensation in the throat, vomiting, diarrhea, pain in abdomen etc. They watched for all the signs and symptoms but only vomiting was common and other reported signs and symptoms didn't develop in the case.

Attending paediatricians were updated that it is not life threatening in present case and the same line of treatment will check the recovery. Mathiharan & Patnaik [10] mentioned that on microscopy seeds show prismatic cells, polygonal in shape with slit like lumen and cell wall having fine transverse striae. To confirm the description, we submitted the seeds for microscopic examination so as to reconfirm the diagnosis. (Fig. 4 and Fig. 5)

However, keeping in mind pre-existing PEM grade III, hematological investigations were also advised for management of PEM-III and to rule out any other pre-existing disorder or hematological effect of poisoning. **Hb** – 11.2 gm/dl, **RBC count:** 5.16 million/cmm, **RBC indices:** PCV: 34.2 % MCV: 66.3 fl, MCH: 21.7 pg, MCHC: 32.7 g/dl, RDW: 19.8 %, TLC**:** 18700 /cmm. **Differential leucocyte count**: Neutrophils: 66%, Lymphocytes: 22%, Eosinophils: 8%, Monocytes: 4%, Basophils: 0%, Platelet count: 452000 / cmm, PDW: 10.6 Fl, MPV: 9.1 fL.

Peripheral smear: Microcytic (+1), Hypochromic (+1) Anisopoikilocytosis (+1), WBC series showing Neutrophilic Leucocytosis with mild eosinophilia. Polymorphs show toxic granulation & cytoplasmic vacuoles. Platelets were adequate. With same line of treatment patient started recovering and was discharged on 14-12-2013 after two days of hospitalization. At discharge; parents were advised for Hb electrophoresis to rule out Thalessemia Minor (Indices suggestive).

Discussion:

In present case, Department of Pediatrics sought opinion from Department of Forensic Medicine with reference to diagnosis and treatment subsequently in a clinical case of poisoning by unknown seeds.

A scientific approach for diagnosis was adopted in absence of exhaustive analytical facilities at the center; which proved beneficial not only to patient and relatives but also to attending clinicians. Diagnosis and management of poisoning conditions form part and parcel of curriculum in the disciplines of Forensic Medicine and General Medicine for undergraduate students. [11]

In this case; morphological comparison of seeds in question by gross and microscopic examination was sufficient to conclude it as Jatropha seeds. Signs, symptoms and treatment of poisoning by Jatropha seeds documented in biomedical literature were also of immense help.

Publication by Singh et al [12] on "Jatropha Poisoning in Children" was also discussed in detail. The sigh of relief for patient's relatives and clinicians at the end of entire exercise; that they are dealing with a "non-fatal poisoning case to be managed on symptomatic

and supportive line" was of immense help for discharge of patient with minimal duration of hospitalization.

In absence of exhaustive analytical facility for biological poisons at the center a multidisciplinary approach played a crucial role.

Microscopic appearance of the Jatropha seeds is documented in some literature but without any image in support of description.

Processing of seeds for histological examination in stained preparation can take 18-24 hours and hence can be explored in such situations. The striking feature of present case is image of microscopic appearance of the seeds, which is not available in biomedical literature available to us.

Conclusion:

It is suggested that for clinical cases of medico-legal nature, where diagnosis and management of a condition is obscure; a multidisciplinary approach can be crucial and helpful. Neither clinicians nor Forensic Medicine expert shall hesitate for such approach; especially when Forensic Medicine nomenclature as per MCI is "Forensic Medicine Including Toxicology" and at many private Medical Colleges Forensic Medicine experts are not burdened with medico-legal post-mortem work and hardly have any additional assignments than teaching.

Secondly, in absence of a great analytical set up; optional but scientific approach can yield better results and hence for involving ourselves in such multidisciplinary work shall not have excuse of inadequate infrastructure and facilities. Available resources shall be explored to its best before requesting for modern gadgets having regard to cost effective capital expenses.

Once we prove ourselves, authority managing such institutions will be scientifically convinced for expansion of facilities.

References:

1. Accidental Deaths and Suicides in India: National Crime Records Bureau, New Delhi; 47th Ed: 2014.
2. **Gunheti B K and Singh U P**. The pattern of poisoning in Khammam. JIAFM 2011; 33(4):296-300.
3. **Yadav A and Singh NK.** Pattern of Medico-legal cases in rural area of Faridabad, Haryana. JIAFM 2013; 35(1):60-62.
4. **Saxena V and Das S.** Retrospective analysis of pattern of poisoning in Uttarakhand. JIAFM 2014; 36(3):230-233.
5. **Gupta BD and Vaghela PC.** Profile of fatal poisoning in and around Jamnagar. JIAFM 2005; 27(3):145-148.
6. **Garg V and Verma S K.** Trends of poisoning in rural area of south-west Punjab. JIAFM 2010; 32(3):189-193.
7. **Patel N S et al.** Trends of Poisoning in westerner Uttar Pradesh: A clinico-pathological study. JIAFM 2014; 36(2):142-145.
8. **Timsinha S et al.** Profile of pattern of medico-legal cases in casualty of a teaching hospital of western region of Nepal. JIAFM 2015;37(1):46-49.
9. **Pillay VV**. Text Book of Forensic Medicine & Toxicology. 15th ed. New Delhi: Paras Publishers; 2010.pp 499
10. **Mathiharan K, Patnail AK**, editors. Modi's Medical Jurisprudence and Toxicology. 23rd ed. Gurgaon: Lexis Nexis; 2010. p 252.
11. **Graduate Medical Education, 1997**. Medical Council of India, New Delhi.
12. **Singh R K et al.** Jatropha Poisoning in Children. Med Journal Armed Forces India 2010; 66(1):80-81.

Fig. 1: Fruit Resembling "Lemon" and Adjoining Dried Fruit Showed Three Lobes having Oval Shaped Brownish Seeds

Fig. 2: Transverse Cut Section of Fruit- Three Compartments, One Seed in Each

Fig. 3: Jatropha Fruit and Seeds in Textbook of Forensic Medicine and Toxicology

Fig. 4: T S of Seed Shows Polygonal Cells with Slit like Lumen (H& E Stain, 40X)

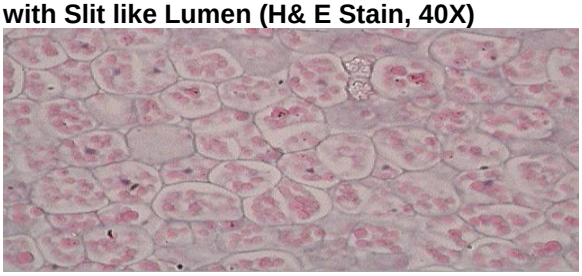

Fig. 5: L S of Seed Shows Polygonal Cells with Slit like Lumen (H& E stain, 100X, Oil immersion)