



RESEARCH ARTICLE

A study on clinical profile of abrus precatorius poisoning in R.M.M.C.HDr. N.Karthikeyan¹, Dr. P.Swaminathan²¹ Postgraduate student, ² Professor, Department of Emergencies Medicine, Rajah Muthiah Medical College, Annamalai University, India**Received 07 October 2014; Accepted 13 October 2014****ABSTRACT**

Self harm has often been thought of as a problem particular to the industrialized world. It is clear from many studies that not all people who die following acts of self-harm actually wish to die. Instead, the acts are used to express rage or hostility, or to gain revenge by causing distress to another person. Many factors affect the outcome, including the degree to which the poison's toxicity was understood, the speed with which the person comes to clinical attention, and the availability of effective medical treatment. Our objective is to find out the incidence and clinical presentation of Abrusprecatorius poisoning in Emergency room R.M.M.C.H. This study was conducted in 30 patients who were admitted to Rajah Muthiah Medical College Hospital with alleged history of consumption of seeds of Abrusprecatorius poisoning, from July 2012 to June 2014. The male: female ratio was 1:4. This shows that females indulge themselves in greater number in deliberate self-harm. Hypokalemia was noted in 40% of patients included in this study, which was only mild. This is probably secondary to excess fluid loss. This fact is also supported by the study done Fernando C. The major symptoms of abrus poisoning include vomiting 100% and diarrhea 67% that may become bloody. Severe dehydration may be the result, followed by low blood pressure. Other signs or symptoms may include hallucinations, seizures, and blood in the urine 33%. Within several days, the person's liver, spleen, and kidneys might stop working, and the person could expire. Approximately 7% of the patients may die following ingestion of these plant seeds.

INTRODUCTION:

Self harm has often been thought of as a problem particular to the industrialized world. Recent work has, however, begun to emphasize its importance in the developing world: the Global Burden of Disease study reported that 593000 people killed themselves in the developing world during 1990, 75% of the world wide total of deaths from self-harm.

It is clear from many studies that not all people who die following acts of self-harm actually wish to die. Instead, the acts are used to express rage or hostility, or to gain revenge by causing distress to another person. In some cultures, this may be seen as the only means with which to express one's anger with someone. People who do want to kill themselves often do not succeed; in contrast, others with little or no suicidal intent die from their act.

Many factors affect the outcome, including the degree to which the poison's toxicity was understood, the speed with which the person comes to clinical attention, and the availability of effective medical treatment. However, the toxicity of available poisons and the paucity of medical services in the developing world ensure that the mortality rate for deliberate self-poisoning is also high,

at 10-20% far higher than the 0.5-1% commonly found in industrialized countries.

POISON

In the context of biology, a poison is a substance that can cause disturbances to organisms, usually by chemical reaction or other activity on the molecular scale, when a sufficient quantity is absorbed by an organism. The various poisons include medicines, pesticides, chemicals, plant parts and others.

PLANT POISONING

Poisonous plants have been used for centuries for homicide, suicide and inducing abortion. However, they appear to be used in few localities for self-poisoning now. Some have become locally popular methods for self-harm. The common plants used for the purpose of self-poisoning in India include yellow oleander (*Thevetia peruviana*), pink oleander (*Nerium oleander*), white oleander (*Cerebra thevetia*), oduvan leaf (*Clisanthus collinus*), superb lily (*Gloriosa superba*), *Abrus precatorius*, thorn apple fruits (*Datura stramonium*) and others.

INCIDENCE OF PLANT POISONING

The National Poisons Information Centre of All India Institute of Medical Sciences and Research had received a total of 2719 calls over a period of three years of which 1.7% were reported to be plant poisons. This value does not provide an exact picture of the incidence of plant poisoning in India, but represents a trend in the country. Abrusprecatorius (rosary pea or jequirity pea) is common to many tropical areas throughout the world and is sometimes used as an herbal remedy in folk medicine. All parts of the plant are poisonous and the seeds are often ingested as a means of suicide in our country (although the exact regional statistics are lacking).

The reason to undertake this study in this institution is that the institution reports high incidence of plant poisoning. The total number of poisoning cases reported in RMMC&H from July 2012 to June 2014, the duration of this study period, figures out to be 2056, among which 64 cases were reported to be plant poisoning. Among the plant poisoning cases 30 cases were admitted with alleged history of consumption of Abrusprecatorius.

AIMS AND OBJECTIVES:

To study

1. The incidence and clinical presentation of Abrusprecatorius poisoning in Emergency room R.M.M.C.H.

MATERIALS AND METHODS:

This study was conducted in 30 patients who were admitted to Rajah Muthiah Medical College Hospital with alleged history of consumption of seeds of Abrusprecatorius poisoning, from July 2012 to June 2014.

INCLUSION CRITERIA

- 1) All patients admitted to the hospital with alleged history of consumption of seeds of Abrusprecatorius.

EXCLUSION CRITERIA

- 1) Alleged history of consumption of unknown poison
- 2) Alleged history of consumption of mixed poisons
- 3) Age <12
- 4) Known renal / liver disease
- 5) Known bleeding diathesis

ON EXAMINATION

- 1) Heart rate
- 2) Blood pressure
- 3) Respiratory rate
- 4) Cardiovascular system
- 5) Respiratory system
- 6) Abdomen
- 7) Central nervous system

INVESTIGATIONS

- 1) Complete haemogram (haemoglobin, total white cell count, platelet count)

- 2) Serial renal function tests (urea, creatinine)
- 3) Serial electrolytes (sodium, potassium, chloride)
- 4) Coagulation profile (bleeding time, clotting time, prothrombin time, INR)
- 5) Liver function tests (bilirubin, liver enzymes)
- 6) Urine RBCs
- 7) Urine pregnancy test (in female patients)

RESULTS:

Table 1: Time interval between consumption and presentation to the hospital (in hours)

| TIME INTERVAL (hours) | NO. OF PATIENTS (%) |
|-----------------------|---------------------|
| 10-25 | 18(60) |
| 26-40 | 07(23) |
| 41-55 | 02(07) |
| 56-70 | 02(07) |
| 71-85 | 00(00) |
| 86-100 | 01(03) |

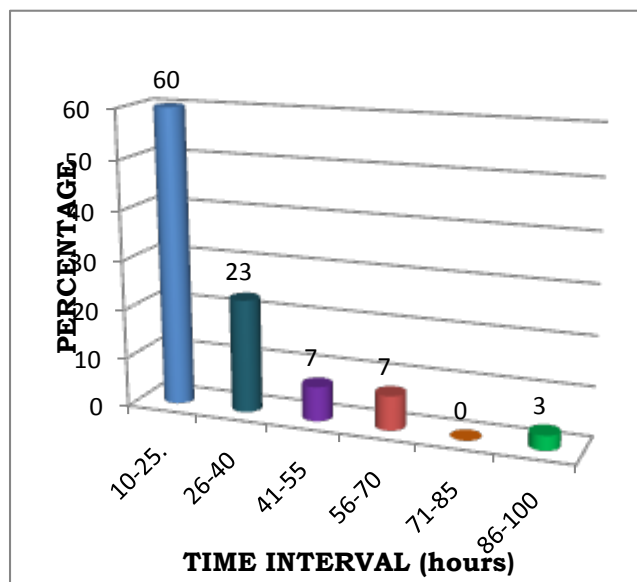


Figure 1: Diagram showing the time interval between consumption and presentation to the hospital (in hours)

In this study of 30 cases, 18 cases presented 10 - 25 hours after consumption (60%); 7 cases presented 26 - 40 hours after consumption (23%); 2 patient presented 41 - 55 hours after consumption (7%); 2 patient presented 56 - 70 hours after consumption (7%); 1 patient presented 86 - 100 hours after consumption (3%).

Table 2: Symptoms and Signs

| SYMPTOM/SIGN | NO. OF PATIENTS (%) |
|-------------------------|---------------------|
| Vomiting | 30 (100) |
| Diarrhea | 20 (67) |
| Abdominal cramps | 15 (50) |
| Haematemesis and melena | 06 (20) |
| Drowsiness | 15 (50) |
| Convulsions | 04 (13) |

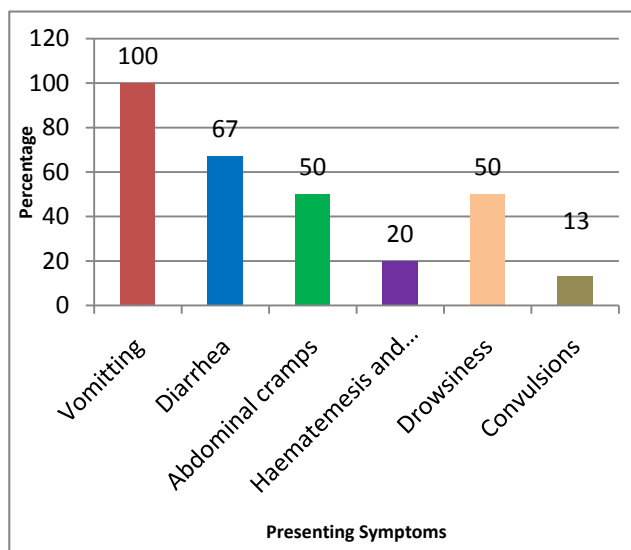


Figure 2: Diagram Showing the Symptoms and Signs

In this study of 30 patients, all 30 patients had vomiting (100%); 20 patients had diarrhea (67%); 15 patients had abdominal cramps (50%); 6 patients developed haematemesis and melena (20%); 15 patients had drowsiness (50%); 4 patients developed convulsions (13%).

Table 3: Hematocrit

| HEMATOCRIT | NO. OF PATIENTS (%) |
|------------|---------------------|
| Normal | 25 (83) |
| Decreased | 05 (17) |

Normal value- Females 35 - 40%
Males 40 - 45%

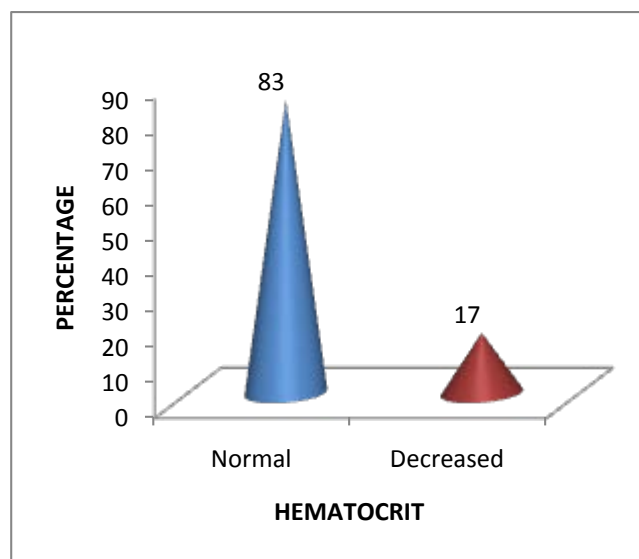


Figure 3: In this study of 30 cases, 25 cases had normal hematocrit (90%), 5 cases had decreased hematocrit (10%).

Table 4: Renal function tests

| RENAL FUNCTION TESTS | NO. OF PATIENTS (%) |
|----------------------|---------------------|
| Normal | 13 (43) |
| Elevated | 17(57) |

Normal values-
Urea- 15 - 40 mg/dl
Creatinine- 0.5- 1.2 mg/dl

DISCUSSION:

Abrusprecatorius is commonly found in the wild in all parts of our country. It is sometimes grown for ornamental purposes also. Due to the easy availability of the plant, chances of misusing the plant for suicidal attempts are reported.

In this study which included 30 patients who presented with alleged history of consumption of seeds of *Abrusprecatorius* from July 2012 to June 2014, the following factors were taken into account and analyzed. The time interval between consumption of *Abrusprecatorius* seeds and presentation to the hospital was taken into account and analyzed which revealed that 60% of the patients presented to the hospital between 10 - 25 hours of consumption and the remaining later. Out of the 30 patients only 2 patient had expired. This clearly shows that time interval between consumption and presentation to the hospital does not significantly alter the outcome.

The male: female ratio was 1:4. This shows that females indulge themselves in greater number in deliberate self-harm.

Among the 30 cases included in the study, maximum number of patients (50%) belonged to the age group of 15-25 years, which clearly shows that adolescents and young adults involve themselves more frequently in deliberate self-harm for various reasons.

In this study 30 patients had ingested 4 - 8 crushed Abrus seeds. The latent period between ingestion and the onset of symptoms ranged from 1 - 12 hours. The common symptoms included vomiting, diarrhea, abdominal cramps and drowsiness. Eight patients developed gastrointestinal bleeding. Convulsions were seen in four of the patients. These facts go well in favour of other case reports quoting *Abrus precatorius* poisoning. One such study done by Dr. Cr N Lucas in Lady Ridgeway Hospital, Colombo, Sri Lanka also included the same.

The renal parameters of the 30 patients were analyzed. Derangement in renal function was noted in 17 patients involved in the study. Renal failure may occur due to haemagglutination, haemolysis of red cells, hypovolaemic shock and a direct toxic effect on the kidneys (Poisoning due to *Abrus precatorius* Oquirity bean). Fernando C., General Hospital (Teaching), Kandy, Sri Lanka). Case studies reported renal failure following ingestion of *Abrus precatorius* seeds, the exact statistics for the same are lacking.

Hypokalemia was noted in 40% of patients included in this study, which was only mild. This is probably secondary to excess fluid loss. This fact is also supported by the study done Fernando C.

Liver function abnormality was noted in 20% of study patients, which was assessed by deranged liver function tests. There are many case studies including the one done by Pillav VV, Bhagyanathan PV et al suggestive of hepatocellular damage, although the exact statistics for the same are lacking.

CONCLUSION:

This study was conducted in 30 patients admitted to RMMCH from July 2012 to June 2014, with alleged history of consumption of seeds of *Abrus precatorius* plant.

The following conclusions were drawn from this study:

1. Adolescents and young adults involved more in deliberate self-harm.
2. Females outnumbered males in inflicting deliberate self-harm.

3. The seeds of the plant are extremely poisonous if cracked; a single cracked seed, if swallowed, can be fatal. Abrin, a toxalbumin found in seeds, causes agglutination and haemolysis of red blood cells and injury to other cells. Mature seed, ingested whole, is innocuous since the harder outer coat is unaffected by digestive secretions. However, chewing, grinding or drilling holes in seed allows contact to occur between intestinal secretions and seed core with possible absorption and toxicity.

4. The major symptoms of *abrus* poisoning include vomiting 100% and diarrhea 67% that may become bloody. Severe dehydration may be the result, followed by low blood pressure. Other signs or symptoms may include hallucinations, seizures, and blood in the urine 33%. Within several days, the person's liver, spleen, and kidneys might stop working, and the person could expired.

5. Approximately 7% of the patients may die following ingestion of these plant seeds.

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