Auramine-o (Synthetic Yellow Cow Dung Powder) Poisoning: Rare but Fatal

Shubhangi Dhadke¹, Vitthal Dhadke², Abhijit Giram³

Abstract

Introduction: Cow dung known since long ago for its germicidal properties, used by Indian villagers to clean the house premises. As cow dung is not available easily, nowadays people have started using synthetic yellow coloured powder (Auramine-o) available easily in grocery shops locally known as “Morechap powder” in districts of Maharashtra.

As the poisoning is rare, very few literatures are available mentioning the detailed mechanism of action, clinical presentation and complications.

Aims and Objectives: To study the clinical features, treatment and outcomes of synthetic yellow cow dung powder poisoning.

Material and Methods: 25 patients presenting with confirmed H/O consumption of (Auramine-o) synthetic yellow cow dung powder poisoning were studied. Patient’s routine investigations BSL, RFT, LFT were done. CT brain was done whenever indicated.

Results and Conclusion: Synthetic yellow cow dung powder poisoning was common in young age group and females. Vomiting, respiratory depression were common symptoms. Synthetic yellow cow dung powder poisoning was needed only symptomatic treatment. It was very rare and mortality is low when treated promptly.

Introduction

Cow dung known since long ago for its germicidal properties, used by Indian villagers to clean the house premises. As cow dung is not available easily, nowadays people have started using synthetic yellow coloured powder (Auramine-o) available easily in grocery shops locally known as “Morechap powder” in districts of Maharashtra.

As the poisoning is rare, very few literatures are available mentioning the detailed mechanism of action, clinical presentation and complications.

Aims and Objectives

1. To study the clinical features.
2. To study the response to treatment.
3. To study outcome of (Auramine-o) synthetic yellow cow dung powder poisoning.

Material and Methods

Study design: Prospective study
Source of data: The study was carried out in Dr. V.M. Government Medical College, Solapur.
Duration of study: January 2016 to July 2016.
Inclusion Criteria:
1. Age > 13 yrs.

Results

Of the 25 cases studied 10 were males and 15 females. Three patients were <20 years of age, 13 were 20-40 and 9 were >40.

From Table 1 shows the clinical features in patients.

All patients were treated with supportive line of treatment

Editorial Viewpoint

• Cow dung powder is commonly used in Indian villages for cleaning household.
• Auromine-o used in synthetic powder has neurotoxic and hepatotoxic properties.
• Symptomatic treatment of poisoning complications like seizures and arrhythmias can salvage majority of victims.

2. Patients with confirmed H/O consumption of (Auramine-o) synthetic yellow cow dung powder

Sample size - 25 Patients.
25 patients presenting with confirmed H/O consumption of synthetic yellow cow dung powder poisoning were studied. Patient’s routine investigations BSL, RFT, LFT were done. CT brain was done whenever indicated.

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Cow dung known since long ago for its germicidal properties, used by Indian villagers to clean the house premises. As cow dung is not available easily, nowadays people started using synthetic yellow coloured powder available easily in grocery shops locally known as “Morechap powder” in districts of Maharashtra state. This issue came into light when people started consuming this yellow synthetic cow dung powder due to closure of “Beedi Industry” as it was banned by Government. This study was conducted to know the socioeconomic causes behind this poisoning, its clinical features and treatments. Study was conducted at Dr. V.M. Government Medical College and Shri Chhatrapati Shivaji Maharaj Sarvopchar Rughalaya, Solapur, Maharashtra. 25 patients admitted with H/o synthetic cow dung powder consumption from January to July 2016.

All patients had their clothes and body stained with yellow colour which persisted even at the time of discharge. Among 25 patients studied, 10 had GI symptoms as vomiting and epigastric discomfort, 6 had respiratory depression while 4 had convulsions. One had both respiratory depression as well as cardiotoxicity. Two patients died immediately after arrival in Emergency department and two after admission.

**Some Interesting Case Details**

**Case 1**

A 17 year girl presented with H/o consumption of yellow synthetic cow dung powder. She had multiple episodes of vomiting during transportation. On examination, her body and clothes were stained with yellow colour. Even the urine was lemon yellow coloured. She was drowsy and responding to painful stimuli. Vitals were normal. Other systemic examination was normal. Stomach wash, body decontamination was done. IV fluids, PPI and supportive care was given. After 2 hours she had 3 episodes of generalised tonic clonic convulsions which were controlled with antiepileptics. Lab investigations such as CBC, RFT, LFTs were normal. CT Brain was normal. Subsequently she was fully conscious and oriented and discharged on antiepileptic drugs after 4 days.

**Case 2**

A 60 year male admitted with H/o consumption of yellow synthetic cow dung powder. He had multiple episodes of vomiting. On examination he was stuporous, minimally responding to the painful stimuli. GCS was E1V1M3. But after 2 days he died of respiratory depression due to multiple episodes of vomiting. She died immediately after admission to hospital.

**Case 4**

Other female who arrived in Emergency department with status epilepticus had her body and clothes stained with yellow colour. She had bilateral aspirations and was intubated immediately due to falling saturation and low GCS. But she succumbed in the Emergency department only even after resuscitative efforts.

Cow dung powder is available in 2 types – Auramine-O (Yellow) and malachite green (Green). Auramine is a neurotoxic poison which causes CNS depression. Centrilobular necrosis due to toxic metabolites leading to severe hepatic damage manifested as

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>No. of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vomiting, epigastr pain</td>
<td>10</td>
</tr>
<tr>
<td>Respiratory depression</td>
<td>6</td>
</tr>
<tr>
<td>Seizures</td>
<td>4</td>
</tr>
<tr>
<td>Arrhythmia (ventricular tachycardia)</td>
<td>1</td>
</tr>
<tr>
<td>Asymptomatic</td>
<td>6</td>
</tr>
</tbody>
</table>

Discussion

Total 25 cases were studied. 25 patients presenting with confirmed H/O consumption of synthetic yellow cow dung powder poisoning were studied. Patient’s routine investigations BSL, RFT, LFT were done. CT brain was done whenever indicated.

Because of cheaper cost and easy availability, this poisoning has become popular in last 4 months in Solapur (Vidi Gharkul area). The reason was loss of job due to closure of beedi industry by Government. Surprisingly, there are no cautionary labels on the packet. Even though it is legally banned, the poison is widely available in market and no step is taken to prevent it.
jaundice, upper abdominal pain, and vomiting. Auramine being a cationic dye causes severe ocular injury on eye contact and damages the gastrointestinal mucosa on ingestion. Chronic effects of Auramine dye include carcinogenicity, mutagenicity and its long-term inhalation leads to pneumoconiosis.

Malachite Green is multi-organ toxin which shows delayed toxicity. Rarely do these cases get referred to tertiary or teaching hospitals which add to the reason why synthetic cow dung poisoning is not reported in literatures. Animal and observational research confirms that Malachite Green is multi-organ toxin with delayed toxicity. Very few cases have been reported with Auramine poisoning while there are no references so far about Malachite Green poisoning.

The yellow powder causes GI irritation and damage to the mucosal membrane hence causing epigastric pain, vomiting and discomfort.

Acute exposure initially shows neurological features like seizures, non-specific muscle cramps, spasms, focal deficits and coma. Except for any primary focal neurological deficit, seizures are one of the deadly events caused by many poisons. The sudden onset of seizure episode in poisoning signifies the involvement of both the cerebral hemispheres. Direct CNS effect of the poison is clearly evident from the low GCS score of the patients. In our study we found neurotoxicity in the form of respiratory depression and seizures which is also observed in studies done by Hisham et al. One male died due to cardiac arrhythmias which needs further evaluation for the correlation with toxicity profile of compound as it is not found in any studies done till date. Cardiotoxicity may be due to poison.

In all patients serum bilirubin and liver enzymes were normal till discharge as opposed to hepatotoxicity mentioned in the studies done by Hisham et al.

Our all patients had yellowish body discoloration but bilirubin and SGOT/SGPT were normal. Hence, the discoloration of skin could be due to deposition of powder in different parts of the body as observed by Krishnamoorthy et al.

### Conclusion

Synthetic yellow cow dung powder poisoning was common in young age group and females. Vomiting, respiratory depression were common symptoms. Synthetic yellow cow dung powder poisoning was needed only symptomatic treatment. It was very rare and mortality is low when treated promptly. Strict actions needs to be taken on banning such toxic products which are sold in the market.

### References