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Case Report

Naphthalene Poisoning Manifesting as Hemoglobinuria

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ABSTRACT

Reddish black discoloration of urine in absence of red blood cells (RBCs) can be a manifestation of hemoglobinuria or myoglobinuria. We report a patient who was admitted for persistent vomiting. On 2nd day of admission, his urine turned reddish black. The patient then revealed that he had ingested mothballs 1 day back to commit suicide. The patient was managed conservatively with intravenous (IV) fluids and antiemetics. Mothballs are rarely reported as a suicidal agent and most cases are related to accidental exposure of children while playing. IV hemolysis is also reported with mothball ingestion. Our patient quickly became normal within 24 h and there was no residual organ damage.

Key words: Hepatic failure, IV hemolysis, mothball, myoglobinuira, methemoglobinemia, renal failure, suicide

INTRODUCTION

Naphthalene mothballs are commonly used in Indian households as an insect repellent. Its intentional poisoning has rarely been reported in the medical literature despite its widespread use in Indian households. Through accidental ingestion of mothballs, especially in pediatric age group children, is known[1] and unintentional exposure to naphthalene in glucose-6 phosphate dehydrogenase (G6PD) deficient people is known to cause hemolysis,[2] but use of naphthalene mothballs as a suicidal agent is not described much in literature. The patient presented with persistent vomiting which started immediately after ingestion and on the 2nd day, patient developed hemoglobinuria, leading to reddish black discoloration of urine. The patient was managed conservatively with intravenous (IV) fluids and recovered fully within 24 h without any residual organ dysfunction.

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This is a rare manifestation of a rare poison, that is, naphthalene in the form of mothballs.

CASE REPORT

An 18-year-old boy presented to our hospital with history of persistent and frequent vomiting for few hours. He was having tachycardia and his blood pressure was 100/70 mmHg. At admission, he categorically denied having taken any drug or poison. There was no history of similar events in the past. He was managed with IV fluids and antiemetics. The vomiting subsided with the treatment over few hours. The next morning he complained of passing reddish black urine, for past 16 h. He seemed frightened, himself came out with history of consumption of three mothballs (naphthalene balls) 1 day back as a suicidal attempt.

We managed him conservatively. The urine which was reddish black in color initially and it got normalized in next 24 h [Figure 1]. The urine microscopy did not show any red blood cells (RBCs). His hemoglobin was 10 g% and peripheral smear was unremarkable. His liver function tests were also normal. As the patient did not have any hepatic or renal dysfunction and was hemodynamically stable, he was discharged on the 4th day after psychiatry evaluation

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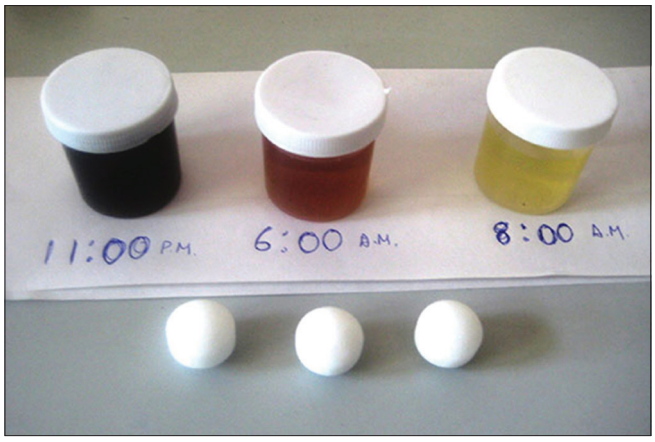


Figure 1: A sample of the mothballs that the patient had consumed. Sequential collection of urine showing clearance of hemoglobinuria over time

and counseling. A diagnosis of IV hemolysis resulting from naphthalene poisoning, leading to hemoglobinuria was made finally. He did not have any complaints on follow-up.

DISCUSSION

Mothballs contain naphthalene, but due to its inflammable nature the newer mothballs now contain 1,4-dichlorobenzene also labeled as para-dichlorobenzene or p-dichlorobenzene. Both of these have strong pungent odor often associated with mothballs. Intentional naphthalene poisoning is very rare and we could not find many reports in the literature of suicidal naphthalene poisoning. Use of naphthalene balls as chronic inhalant abuse was however reported by Weintraub *et al*., which was associated with chronic neuropathy and chronic renal failure.[3] Hemolytic anemia and methemoglobinemia are well-known adverse effects that follow ingestion of naphthalene mothballs, but they are only rarely reported in association with ingestion of p-dichlorobenzene mothballs. One such asymptomatic pediatric case presented after ingesting p-dichlorobenzene mothballs and 3 days later, the boy developed hemolysis and methemoglobinemia.[1] Naphthalene ingestion leading to toxicity is rare and all cases must be reported. Its use has increased in recent years and upto 27% of the households have reported use of mothballs. Strangely, many people use it for its fresh fragrance, rather than for insect repelling properties.[2]

Apart from toxicity from ingestion, naphthalene balls are now a well-known cause of IV hemolysis, even after house hold exposure in G6PD deficient children.[2] Use of mothballs in the households is unsafe for the same reason, as 2–13% incidence of G6PD deficiency has been found in various parts of the world.[1] According to Chugh *et al*., G6PD deficiency is around 4.5% in North India.[4] Though G6PD is an X-linked disorder and manifests in males, a G6PD deficient female, developed IV hemolysis following accidental ingestion of naphthalene balls.[5]

Thus, physicians must entertain a possibility of naphthalene toxicity either through household, accidental, or intentional exposure in all cases of IV hemolysis. We also must try to rule out G6PD deficiency in all cases of IV hemolysis. In our case, however, we could not check G6PD levels as the patient refused for further investigation upon follow-up. The use of naphthalene as an agent of inhalational abuse also must be kept in mind, the history for which may not be forthcoming so easily.

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