CASE REPORT

Litarge (Murdar Singh) Ingestion Induced Lead Toxicity: A Case Report.

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Abstract

Background: Litarge (Lead II oxide) is named Murder-sang, Murdar Singh or Mordab-Sangh (MS) in person, is applied to reduce body odor in the axillary and legs. Several other indications were mentioned in ancient medicine such as syphilitic chancre wound healing, bed sore, and so forth. We reported lead intoxication by eating a few MS.
Case: A 34-year-old man was visited due to accidentally consuming his wife's MS powder by adding to his food instead of spices, 10 days earlier. He experienced acute abdominal pain and non-bloody diarrhea 6 hours after ingestion. His symptoms were finally treated by supportive therapy despite their persisted. Ten days later, his blood lead level was 1250 µg/L. His hemoglobin level reduced and transaminase raised to 1.5 times more than the upper limit. He was treated with oral Succimer 10 mg/kg three times a day in the first 5 days and continued by 10mg/kg twice a day up to 21 days. On the 5th day of treatment, his symptoms improved. His blood lead level was 545.5 µg/L on the 8th day of treatment and reduced to 254 µg/L and 245 µg/L one and two months later.
Discussion: Mordab-Sangh could induce lead toxicity if ingested. However, other metal poisoning should be considered in MS ingestion

Keywords: Lead Poisoning; Heavy Metal Poisoning, Diarrhea; Chelation Therapy

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INTRODUCTION

Lead is a toxic metal that is widespread all around us. There are several known source of lead toxicity, such as environmental pollution, industrial sources, opium addiction, ingested lead foreign bodies, retained lead bullets etc. [1-3].

Oxide Lead (PBO) is a yellow powder that if not crystallized is named Massicot and Litarge is a crystalline sample. Litarge (Lead II oxide) is named Murder-sang, Murdar Singh, or Mordab Sangh in person, contains lead, which can destroy living organisms such as odor-producing bacteria. As a result, Litharge is sold as a material to reduce body odor in the axillary and legs [5]. Several other indications were mentioned in ancient medicine such as syphilitic chancre wound healing, bed sore and other uses [5] . However, the rate of lead absorption through skin from apical dermal application of Litharge is high. There is no report of Litharge induced lead toxicity by oral ingestion, to the best of our knowledge. Hence, in this study, we reported lead intoxication by eating Litharge.

CASE PRESENT

In January 2021, a 34-year-old man married mechanical engineer was referred via family physician to the department of clinical toxicology and poisoning of Imam Reza hospital affiliated to Mashhad University of Medical Science (CTD-IRH-MUMS) with mild diarrhea, abdominal pain, and blowing due to consuming powder of Litharge. This patient set out eating approximately a tablespoon powder of Litharge mistakenly, 10 days earlier. The patient's wife used to consume this powder as a deodorant so the patient mistakenly ate Litharge powder instead of spices by adding to his food. When her wife returned home, she found the husband's mistake. About 6 hours later, he experienced acute abdominal pain and non-bloody diarrhea. He recourse to the family physician and underwent treatment with water and electrolyte and Hyoscine. Due to persistent abdominal pain and diarrhea, a total blood lead level test was requested in consultation with clinical toxicologist. His blood lead level was 1250 µg/L (Table 1). On the previous day before his intoxication, he had done his annual occupational laboratory test check-up (Table 1). The patient was referred to a toxicologist via his physician 15 days after ingestion. The patient was oriented and able to answer questions when visited in CTD-IRH-MUMS' outpatient clinic. In history, he did not mention any history of addiction or high-risk job. In addition, he had no past medical history of hospital admission. On physical examination, he had normal vital signs including blood pressure 115/70 mmHg, pulse rate 85 beats/min, temperature 37.5 c°, and respiratory rate 15 breaths/min. His sclera was not icteric or

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pale and his pupils were normal in size and light reaction. The physical exams of the respiratory, musculoskeletal, and cardiovascular systems were unremarkable. There was no lead line on the gum. His abdomen was soft with light epigastric tenderness. He did not cooperate in sampling to evaluate the urinary arsenic levels. He was treated by Succimer 10 mg/kg TDs (three times a day) in the first 5 days and continued by 10mg/kg twice a day up to 21 days and Garlic tablet TDs. On the 5th day of treatment, abdominal pain and watery diarrhea improved. His blood lead level was 545.5 µg/L at the 8th day of treatment. The result of urine arsenic level on the second month after poisoning was unremarkable. His blood lead level was 254 µg/L and 245 µg/L one and two months later, respectively. He did show any more symptoms. We lost his fallow up.

Table 1. The laboratory test results of the patient with Litharge (Lead II oxide) poisoning in one day before poisoning and 10 days after consuming Litharge powder.

Test (unite)	unite	One day before poisoning	10 days after eating Litharge powder
White blood cells ×1,000	Cell /ml	4.7	7.20
Neutrophils	%	67.1	69.1
Hemoglobin	mg/dL	15.6	14.7
Hematocrit	(%)	45.4	41.1
Platelets ×1,000	cell /ml	190	195
erythrocyte sedimentation rate	1/h	2	-----
Blood urea nitrogen	mg/dL	17	58
Creatinine	mg/dL	0.6	1.3
Fasting blood sugar	mg/dL	96	-------
Aspartate transaminase (SGOT)	U/L	18	41
Alanine transaminase	U/L	27	56
Alkaline phosphatase	U/L	192	182
Sodium	mmol/L	------	139
Potassium	mmol/L	------	4.2

DISCUSSION

The current case accidentally ingested Litharge powder instead of spice, and presented the un-specific gastro-intestinal manifestations such as nausea, vomiting, diarrhea, and abdominal pain. We could not find similar case in literatures. We only find three similar cases all of which used Litharge powder topically [6, 7]. In contrast to the current case, all of the previous studies presented typical manifestations of lead toxicity including abdominal pain, constipation, anemia etc. [6, 7]. However, the current case, who ingested Litharge powder (Murdarsangh) had abdominal pain, diarrhea, normal hemoglobin, and no encephalopathy.

The patient had a high blood lead level 5 days after ingestion of a few amounts of Litharge powder. The patient's blood lead level did not match the total amount of ingested Litharge powder; as much as spice; and it was much higher than expected.

It may suggest that the high lead level was not acute and he had already high levels of lead. This suggestion does not seem to be true. Because the patient had no known risk factors (such as addiction) [2, 3, 8]. He also had no anemia in the tests performed the day before the accident.

Unfortunately, the patient's wife was not satisfied with the lead test and we could not evaluate that if the presence of Litharge powder in the home can chronically increase the patient's lead level through inhalation or topical use. The third conjecture is that the amount of absorbed lead through gastrointestinal following the consumption of Litharge powder may be much more than determined so far; and the most studies on the absorption kinetics of lead have not used this compound [1]. Usually in an adult, 10% to 15% of ingested lead in food absorbs[1]. However, Rahimi and Dastghosadeh evaluated the metal content of Litharge and found a high concentration of lead in Litharge. They reported that the average of Pb, Ni, Cd, Cr, and Ag concentrations in Mordarsang were 747946±127481, 2026±1081, 4.91±2.2, 541±94.7 and 100±61.8 mg/kg respectively [9].

Constipation is a characteristic manifestation of lead poisoning whose exact mechanism had not been completely clarified, to date [1, 10, 11]. The current case had diarrhea instead of constipation. However a few references mention diarrhea in acute lead toxicity, the majority of literatures cite constipation [1-4, 12]. As the ingested Litharge powder may not be pure lead oxide and it may be contaminated by several metals compounds such as arsenic or cadmium, the part of gastro-intestinal manifestations of the patient could be related to intoxication with other metals. However, we could not find any clues of such poisoning since the patient did not cooperate in sampling to evaluate the urinary arsenic levels. Fortunately, lead, arsenic, and cadmium and the most of the other heavy metals have similar chelated antidote [13].

The blood lead level of the patient (>100 µg/dl) indicated parenteral therapy of lead toxicity, included: Ball and Ca2EDTA [1]. Nevertheless, as the recommended drugs were not available at that time, the patient was treated by Succimer with an appropriate response without any side effects.

CONCLUSION

In conclusion, based on the findings, it can be argued that acute ingestion of small amount of Litharge could induce significant lead poisoning. Hence, proper training and information-rising practices are suggested to all those individuals, who are in contact with poisonous powders at home.

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