

Adult lead poisoning from a herbal medicine

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ABSTRACT

A 56-year-old Indian lady presented with one week history of abdominal pain, jaundice and chronic polyarthralgia. She had evidence of hemolytic anemia and hepatitis. Her blood lead level was high and a peripheral blood film showed dense basophilic stippling. It is believed that the lead toxicity was due to the use of Indian herbal medicine.

Keywords: Lead poisoning, herbal medicine, basophilic stippling.

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Lead poisoning has been known since antiquity. It has variable clinical manifestations in the nervous, hematological, renal, gastrointestinal, cardiovascular, musculoskeletal and endocrinological systems. Unless there is a high degree of suspicion, it can lead to extensive and unnecessary investigations during the course of diagnosis. The clinical manifestations correlate with the lead level and progress from biochemical and subclinical abnormalities at levels around 10mcg/dl to coma and death at levels above 100mcg/dl.¹ It is important to know the source of the lead poisoning as prevention of further exposure is paramount in the management of the condition. This case report illustrates the significance of folk remedies as possibly unrecognized sources of lead poisoning.²

Case Report. A 56-year-old widowed Indian housemaid was admitted to Hamad General Hospital, Doha, Qatar, after presenting at the Accident and Emergency Department with a history of one week vague diffuse abdominal pain, nausea, loose bowel motion, yellowish discoloration of sclera, and dark urine. She had no vomiting or fever. She had a long

history of generalized weakness, headaches, recurrent dark urine and vague aches and pains. She had not taken any drugs nor travelled abroad recently and was in long-term steady employment with a Qatari family. A year previously she had received a blood transfusion for anemia found during minor surgery for an ingrowing toenail. This anemia had not been investigated further. Clinical examination revealed a toothless, depressed ill looking lady, pale, jaundiced and with a blood pressure of 150/90mmHg, pulse rate 80/min, respiratory rate 18/min and a temperature of 36.8°C. She had diffuse abdominal tenderness with no organomegaly. Heart sounds, chest auscultation, neurological examination, chest x-ray, ultrasound (US) and computerized tomography (CT) scans of the abdomen were all normal. Results of laboratory examinations were white blood count (WBC) $10.0 \times 10^3/\text{mm}^3$, hemoglobin (HGB) 8.36 gm/dl, mean corpuscular volume (MCV) 76.8fl, mean corpuscular hemoglobin (MCH) 25.1pg/cell, platelets $218 \times 10^3/\text{mm}^3$, reticulocyte 15.1%, random blood sugar 6.1mmol/L, blood urea nitrogen (BUN) 7mmol/L, creatinine (Cr) 105mmol/L, sodium (Na) 138mmol/L, potassium (K)

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3.6mmol/L, chloride (Cl) 99mmol/L, bicarbonate radical (HCO_3) 25mmol/L, calcium (Ca) 2.3mmol/L, serum amylase 25U/L, total bilirubin 68mmol/L, direct bilirubin 18mmol/L, alanine transaminase (ALT) 103U/L, aspartate transaminase (AST) U/L72, gamma glutamyl transferase (GGT) 10⁹U/L, alkaline phosphatase 182U/L, lactic dehydrogenase (LDH) 561U/mL, total protein 64gm/dl, albumin 39gm/dl, uric acid 169 umol/L, physical therapy 14.1sec, international normalized ratio (INR) 1.0, partial thromboplastin time (PTT) 37 sec, haptoglobin <6mg/dl(27-139mg), serum ferritin 305ng/ml and glucose-6-phosphate dehydrogenase (G6PD) was normal. Hemoglobin electrophoresis showed a normal pattern. Sickling test, Coomb's test, Ham test, antinuclear antibody (ANA), mycoplasma titer, Hepatitis (A, B, and C) serology were all negative as well as stool occult blood (SOB). A stained film of peripheral blood showed a normocytic normochromic picture with dense basophilic stippling (**Figure 1**). Blood lead level was elevated at 152.9mcg/dl and urine lead was 4785 ug/24 hours. She was found to have elevated blood lead level of 152.9mcg/dl and 24 hours urine lead of 4785 ug/24 hours.

DISCUSSION. Lead poisoning has occurred from a wide array of occupational and non-occupational sources. In this patient extensive investigations failed to elucidate the cause of her abdominal pain, anemia, hemolysis, hepatitis and chronic musculoskeletal complaints until dense coarse basophilic stippling in a peripheral blood film suggested the possibility of lead poisoning. This was supported by the high levels of lead in the blood and urine which, after excluding other causes of occupational and environmental exposure was presumed to be due to the long term use of herbal medicine brought from India. For years she had taken this traditional medicine in the form of a powder for generalized weakness, but she refused to provide us with a sample. Contamination of folk remedies with lead is increasingly being recognized as an important cause of lead intoxication. The lead content of some Indian folk remedies varied from 12% to 72% in one study.³ Lead has been reported to be an ingredient of different folk medicines for example Hai Ge Fen (Clamshell powder) and Zhen qi jiang tnaq in Chinese herbal medicine,^{4,5} Indian herbal medicine,^{6,7} and folk medicine used in Oman,⁸ Mexico, Pakistan and Middle East.⁹ Awareness of folk remedies as a possible cause of lead intoxication deserves further investigation and can possibly lead to recognition of similar cases since the use of such remedies is a common practice in this part of the world. Related to the subject is the use of some traditional cosmetics like Kohl, which is mainly worn around the eyes in Asia, Africa, and the Middle East area. It may be an

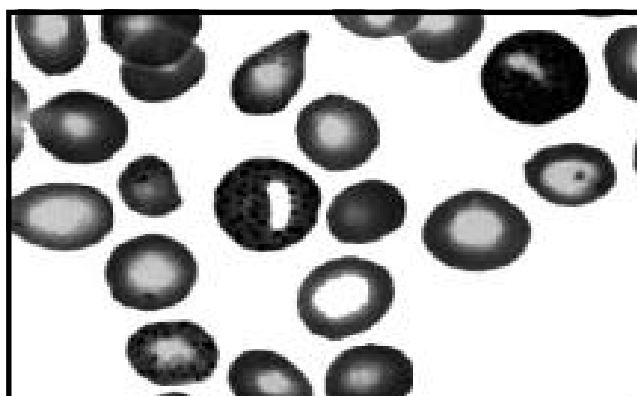


Figure 1 - Peripheral blood film (Wright's stain: x 1000) showing dense basophilic stippling).

important source of lead poisoning in those areas and amongst individuals from those areas who have immigrated to developed countries.¹⁰ Our patient had gastrointestinal manifestations, hemolysis, anemia, hepatitis and musculoskeletal symptoms. The unusual features of hemolysis and hepatitis tend to occur more with acute poisoning, which may be explained in this patient by the recurrent acute exposure to lead in herbal medicine on top of chronic toxicity. Percutaneous liver biopsy shows hepatic inflammation without evidence of hepatocyte necrosis or pronounced portal triad involvement. Lead has an effect on both erythropoiesis and red blood cell (RBC) survival. It has an inhibitory effect on the enzymes involved in heme biosynthesis leading to anemia, which tends to be mildly hypochromic microcytic. The hemolysis associated with lead poisoning may be explained by ineffective erythropoiesis, spatial changes in the arrangement of RBC membrane proteins. If the blood lead level is sufficiently high, pyrimidine 5 nucleotidase is inhibited, causing accumulation of nucleotides that inhibit the pentose phosphate shunt leading to hemolysis as in the genetically determined deficiency of the enzyme.¹¹ Our patient had the typical gastrointestinal manifestations that include abdominal pain, nausea, anorexia, vomiting, constipation or occasionally diarrhea. Severe paroxysmal colic and ileus (lead colic) characterized by a rigid and retracted abdomen may occur. Acute colonic dilatation may be an important component of pain and constipation syndrome characteristically described.¹² Richardson described a documented case of toxic megacolon associated with acute intoxication that resolved with chelation.¹³ She also had the typical rheumatological manifestations of lead arthralgia with frequent complaints of pain in muscles and joints which occur in chronic lead exposure. The patient received D-penicillamine orally and was advised against the use of her herbal

medicine. Abdominal pain weakened and her ALT, AST, alkaline phosphatase and bilirubin returned to normal.

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