CASE REPORT

AN UNUSUAL CASE OF ACUTE MERCURY POISONING IN A NEONATE

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Abstract

Mercury poisoning is a rare cause of poisoning in pediatric age group. Although fetal and neonatal poisoning with mercury has been described due to chronic antenatal maternal exposure, acute mercury poisoning in the neonate has not been described in literature. Here we present a very rare case of acute mercury poisoning in a neonate which was later found to be of homicidal intent.

Keywords: Mercury, poisoning, neonate, pediatrics, homicidal.

Introduction

Mercury is silver-colored liquid at room temperature. Mercury is available in inorganic and organic forms. (1,2) All compounds of mercury are toxic but differ in the routes of absorption, clinical findings, and responses to therapy. Methylmercury, the soluble form is neurotoxic. The clinical effects of mercury poisoning depend on the form and the route of entry. Neurologic, gastrointestinal, respiratory tract and renal systems are predominantly affected depending on the route of exposure. (3-5)Elemental (organic) mercury is especially hazardous for children since it is in liquid form and can easily be found. (6).However mercury poisoning is extremely rare in neonates and infants. Herein we present a case of acute mercury poisoning in a seventeen day old baby.

Case Report

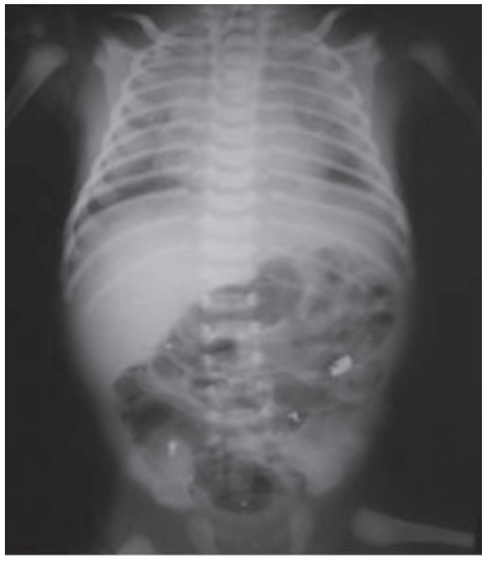
A 17 day old male baby, first born of non-consanguineous marriage and exclusively breastfed was brought with complaints of excretion of shiny, metallic like substance in urine for four days followed by vomiting associated with chemical burns of lips, chin, cheeks and oral cavity one hour prior to admission. The urine of the child was brought in a plastic cover and clearly resembled metallic mercury.(Figure 1)

At admission baby was sick, had severe respiratory distress, stridor, cyanosis, suboptimal pulses and abdominal distension. Baby was intubated and mechanically ventilated for 48 hrs. Circulation was optimized with IV fluid boluses and inotropes.

Investigations revealed normal Hemogram and renal function tests. Blood gases showed pH of 6.863 with bicarbonate of 7meq/l which was treated with IV sodium bicarbonate. X-ray of chest and abdomen showed beady metallic substance in the abdomen and in the right lower lung fields. (Figure 2) Baby had severe pneumonia requiring mechanical ventilation. Baby developed pneumothorax on left side within first 24 hours which was treated with intercostal tube drainage. As mercury poisoning was strongly suspected, gastric lavage was given with 2.5% soda-bicarbonate and D-penicillamine was administered via nasogastric (NG) tube (100 mg/kg in 4 divided doses). However baby developed intestinal perforation, peritonitis and irreversible shock and succumbed within 48 hours of admission. Blood and urine samples were sent to the government toxicology centre. Reports obtained 2 weeks later revealed a blood mercury level of 15 mcg/dl and urine mercury level of 30mcg/l.

Figure 1: Urine collected in bag showing shiny metallic substance

Figure 2: X- Ray of the chest and abdomen showing metallic substance in the abdomen



Discussion

Mercury (Liquid metal, quicksilver) is a volatile metal and exists in three toxic forms – elemental mercury, mercury salts and organic mercurial. Elemental mercury is used in thermometers, sphygmomanometers, barometers, mercury bulbs and by gold smiths. Organic mercury is found in sea food contaminated by industrial wastes (chlorine and caustic soda, mining, metallurgy, electroplating, textile, paper, pharmaceuticals). Inorganic salts are found in pesticides, vermicides, fungicides, certain paints. (1,2)

Mercury poisoning is rare in pediatric age group and results from accidental breakage of mercury thermometers kept in mouth, breakage of mercury bulbs, parents working in mercury industries bringing home mercurial compounds on their dress and as thiomersal used as preservative in some vaccines. (6) Symptoms depends on mode of exposure. Mercury vapor inhalation resulting in central nervous system (CNS), gastrointestinal and pulmonary symptoms. Mercury salts consumption resulting in CNS and renal toxicity. Acute mercury poisoning results in gut irritation and bloody diarrhea, respiratory distress due to interstitial pneumonia (if inhaled), renal failure, altered sensorium, delirium and paralysis.(6-8) Toxicity in our case was due to mercury administration with homicidal intent.

Mercury exposure in pregnant women has harmful effects on the neonate as the placenta is permeable to elemental mercury. Mercury is also excreted in the breast milk.Prenatal exposure to mercury affects the fetal kidney, causes intrauterine growth restriction and can also cause neurological problems in the neonate.(3,9,10)

Diagnosis of mercury poisoning is by history, mercury levels in blood (> 4 mcg/dl) and mercury levels in urine (> 25 mcg/l). Measuring mercury levels in red blood cells (RBCS) is the most sensitive. (11)Treatment is with gastric lavage with 2.5% sodium bicarbonate, British anti levisite or D – Penicillamine and supportive therapy.

Conflict of Interest: None
Funding: None

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DOI: 10.7199/ped.oncall.2014.48

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