

letters

Accidental inhalation of mercury vapor in a child

To the Editor: Toxicity from mercury exposure occurs with all forms.^{1,2} Accidental swallowing and ingestion of elemental mercury are common occurrences. Fortunately, it rarely leads to toxicity because elemental mercury often passes through the gastrointestinal tract without being absorbed. On the other hand, mercury vapor poisoning is rarely reported, but acute toxicity can be deadly even if a small amount is inhaled.³

All members of a family, including parents, two daughters and a son, were admitted to another hospital's emergency department; all of them complained of fatigue, nausea, vomiting, shivering and fever. The father, an electrical technician, reported that while he was heating a tablespoonful of mercury on the fire in the kitchen in connection with his technical work, his 2½-year-old son was in the

kitchen, seated on the floor, and the rest of the family members were in the other rooms in the house. Within 2 hours of heating mercury, they all began complaining. Shortly after admission to the hospital, the 2½-year-old child became lethargic and had respiratory distress. Due to increasing respiratory distress, he was soon transferred to our pediatric intensive care unit (PICU) for further management. Physical examination at the time of PICU admission revealed a somnolent child that required tactile stimulation to be aroused; had a Glasgow coma scale score of 11, mild tachycardia at the rate of 150/min, normal blood pressure for his age, mild dyspnea, tachypnea at a respiratory rate of 45/min; partial oxygen saturation was 88% on high-flow oxygen via a face mask; and on auscultation, end-inspiratory rales were heard in both basal lung fields. Laboratory findings were as follows. Blood gas analysis revealed mild respira-

tory acidosis. Initial blood mercury level was 512 µg/L (range, 0-10 µg/L), and random urine mercury level was 165 µg/L. Whole blood cell counts; blood biochemistry, including renal and hepatic function tests, electrolytes were normal. His chest roentgenogram revealed bilateral paracardiac infiltration with hyperinflation (**Figure 1**).

The patient was placed on non-invasive ventilation (NIV) via a face mask, and ventilator chelation therapy with D-penicillamine was started at a dose of 20 mg/kg/d; additionally, N-acetyl cysteine and multivitamin therapies were also given to the patient. On the third day of PICU admission, the patient became conscious and was weaned off the ventilator. Test for urinary mercury level was carried out on the 10th day of admission, and the detected urine mercury level was 20 µg/L (normal, less than 25 µg/L).

As mercury vapors are heavier than air and tend to settle down, children playing near the floor may be exposed to mercury if it is present. Moreover, pediatric patients have higher minute ventilation compared with adults, which is detrimental for most inhalation exposures.⁴ Therapeutic management of acute and chronic mercury poisoning mainly involves chelation therapy. Dimercaprol, which was the most popular agent used for the treatment, has now been known to exacerbate neurotoxicity.⁵ D-penicillamine and 2, 3-dimercaptosuccinic acid have been found to increase urinary excretion of mercury. In conclusion, it is important to note that although ingestion of elemental mercury is considered nontoxic, a tablespoonful of mercury vapor can cause acute respiratory failure.



Figure 1. Chest X-ray showing paracardiac infiltration with hyperaeration.

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REFERENCES

1. Haddad JK, Stenberg E. Bronchitis due to acute mercury inhalation. *Amer Rev Resp Dis* 1953;88:543-5.
 2. Counter SA, Buchanan LH. Mercury exposure in children: a review. *Toxicol Appl Pharmacol* 2004;198:209-30.
 3. Ozuah PO. Mercury poisoning. *Curr Probl Pediatr* 2000;30:91-9.
 4. Cherry D, Lowry L, Velez L, Cotrell C, Keyes DC. Elemental mercury poisoning in a family of seven. *Fam Community Health* 2002;24:1-8
 5. Boyd AS, Seger D, Vannucci S, Langley M, Abraham JL, King LE Jr. Mercury exposure and cutaneous disease. *J Am Acad Dermatol* 2000;43:81-90.
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