

# Oral Metallic Mercury

## *A Folk Medicine Remedy for Gastroenteritis*

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**F**OLK REMEDIES for ailments of children take many forms. Some Mexican-Americans, believe that disorders of the alimentary tract may be caused by a bolus of food adhering to the stomach wall, a condition known as *empacho*.<sup>1</sup> To dislodge this "bolus," rubbing, pinching and/or oral administration of purgatives or tea may be tried.

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This report describes two patients with acute gastroenteritis who received a folk treatment of oral administration of metallic mercury, presumably aimed at dislodging a "bolus."

### **Case Reports**

**Case 1.** A 6-month-old Mexican-American girl, was well until one week prior to admission when she developed diarrhea. Her parents denied use of any medication on initial questioning. Admission physical examination revealed a mildly lethargic, dehydrated infant weighing 5.6 kg. Vital signs included: temperature, 36.1C; pulse, 100/minute; respiratory rate, 28/minute; and blood pressure, 80/40 mm Hg. The abdomen was soft with

normal bowel sounds and no palpable masses or enlargement of viscera were detected. Rehydration was accomplished with parenteral fluid therapy and the baby was able to tolerate a soy formula on the third day. On the second hospital day, however, droplets of metallic mercury were found in her diaper. Abdominal radiogram revealed multiple globular opacities in the large and small bowel. On careful questioning the child's grandmother admitted that she had visited a *curandera* (folk doctor) who had given the child a "yellow liquid" as treatment for her gastroenteritis symptoms.

**Case 2.** A 15-month-old Mexican-American girl was well until one week prior to admission when she developed diarrhea. Prior to admission she had been seen by a chiropractor and later by a pediatrician who prescribed paregoric and Donnagel®. In addition, the father had treated the child with Enterovioform®. Admission physical examination revealed an irritable, mildly dehydrated child weighing 9.2 kg. Vital signs included: temperature, 38C; pulse, 126/minute; respiratory rate, 36/minute; and blood pressure, 104/70 mm Hg. The abdomen was soft with normal bowel sounds and no masses or enlarged viscera were palpable. This infant also required parenteral fluids. After 36 hours she was able to take diluted whole milk, bananas, and rice. On the second hospital day, however, beads of metallic mercury were found in her diaper. An abdominal radiograph (Fig. 1) revealed multiple globular opacities throughout the bowel. Despite careful questioning of the parents, no source for this mercury could be found. However, the maternal grandmother did admit to an interest in herbal medical remedies.

## Discussion

Symptoms of empacho include loss of appetite, stomach ache, diarrhea, vomiting, fever, and in children, crying and irritability. Reported treatment for detachment of the food "bolus" from the stomach wall includes rubbing the stomach or back or, more directly, grasping a fold of skin on the back, pulling it up, and releasing it until the "bolus" is dislodged. Additionally, herbal tea or a purgative or both may be given. The tea may be made from *estafiate* (larkspur), *hojas de sen* (senna leaves), *manzanilla* (chamomile), or from the ashes of the food that caused the *empacho*. Purgatives used include castor oil. In fact, some adults use cathartics routinely to keep the stomach "clean" and to "prevent *empacho*."<sup>1</sup> The clinical presentation of our two patients with gastroenteritis is consistent with *empacho*.

Throughout history, mercury has found widespread medicinal use as an antiseptic, antisiphilitic, unguent, and purgative. Sollman cites the 18th century usage of metallic mercury for treatment of



FIG. 1. The presence of radiopaque beads of mercury are shown throughout the intestinal tract.

adynamic ileus in doses of 100 to 500 gm.<sup>2</sup> As late as 1923, Abt recommended mercury cathartics in the form of calomel (mercurous chloride).<sup>3</sup> In our first case, the grandmother reluctantly admitted that a folk doctor had administered a "yellow liquid" to the infant. Although no specific source could be implicated in the second case, detailed discussion with the family uncovered the grandmother's interests in Indian herbal medicine. In neither of our cases was it possible for the child to have received the mercury in any other manner, *e.g.*, via a broken thermometer. All thermometers used were checked and found intact. The presence of beads of mercury throughout the intestinal tract as seen on the abdominal radiographs suggested the likelihood of oral administration.

Neurologic toxicity of organomercury compounds was noted to be associated with Minimata disease in the 1950s and 1960s.<sup>4</sup> Similarly, toxic effects of inorganic mercury have been noted in the kidney, lungs, and liver.<sup>5</sup> Free metallic mercury, on the other hand, has limited systemic absorption after oral administration, hence minimal toxicity. With conversion of metallic mercury to the divalent mercuric ion, systemic absorption may occur.<sup>6</sup> If the integrity of the intestinal mucosa is preserved, metallic mercury normally passes through the gut rapidly enough to preclude significant conversion to divalent mercury. However, if a site for mercury stasis exists, an oxidative-reduction reaction may occur slowly in the presence of water and chloride at body temperature, ultimately transforming

metallic mercury into divalent mercuric compounds. Such an occurrence was recently reported in a patient with a ruptured Miller-Abbott tube, the mercury contents of which collected in a cutaneous-intestinal fistula and were ultimately absorbed.<sup>7</sup> Our patients had no such predisposing factors and were discharged from the hospital after 10 and 2 days, respectively, with full resolution of their symptoms and without signs of mercury intoxication.

To our knowledge the use of metallic mercury purgatives for the folk treatment of *empacho* has not previously been reported in the medical literature. Metallic mercury found in the stools of patients with acute gastroenteritis should prompt the investigation of possible folk-medicine therapies. Although systemic absorption of metallic mercury is probably minimal in uncomplicated cases, such therapy may be harmful if stasis occurs long enough

for the metallic mercury to be converted to toxic mercuric compounds.

## References

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