

## LETTER TO EDITOR (VIEWERS CHOICE)

### REPLY TO VIEWERS CHOICE - AN UNUSUAL CASE OF ACUTE MERCURY POISONING IN A NEONATE

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We read this article with great expectation. (1) Indeed true mercury poisoning is very uncommon, and neonatal exposure is rarer still. We anticipated a report of a novel circumstance by which this unusual scenario occurred. We applauded the authors for attempting to draw attention to an uncommon problem.

The authors describe a tragic case of mercury exposure in a young infant with upper gastrointestinal burns, acidosis, respiratory distress, and the appearance of metallic mercury in the urine. Radiographs demonstrated metallic opacities in the chest and abdomen, consistent with what might be expected in an ingestion and aspiration.

Understanding of this case is limited by the apparent inconsistencies between the alleged exposure to metallic mercury and the serious effects reported. Mercury exists in elemental (or metallic), inorganic, and organic forms. This is a vital distinction. Elemental mercury is negligibly absorbed from the gastrointestinal tract and as a result, isolated ingestion confers far less toxicity than ingestion of either organic or inorganic mercury compounds. Prior to the removal of elemental mercury from commercial thermometers, U.S. poison centers annually received hundreds to thousands of calls regarding children ingesting mercury from thermometers, with no association to any clinical disease. The primary route of toxicity to elemental (metallic) mercury is through inhalation, which has been reported to cause a severe pneumonitis. Perhaps this is in part to blame for this child's respiratory distress.

Elemental mercury is not caustic, and ingestion should not produce burns. Thus, the report of burns as mentioned in this case is surprising. In contrast, inorganic salts of mercury are corrosive and can cause burns of the intestinal mucous membranes. However, the authors imply that elemental mercury has resulted in these symptoms and presents no evidence of inorganic compounds as the cause of this child's symptoms. Moreover, ingestion of elemental mercury does not result in systemic absorption, and therefore would not be found in the circulatory system nor in elemental form in the urine. The authors report the family brought in urine with mercury in it. Did the treating staff observe urine produced by the child containing any metallic mercury? The presence of metallic mercury in the urine is hard to interpret in this context, again raising questions about the circumstances of this exposure.

The article implies elemental mercury crosses the placenta and has been known to cause harm. Again, the authors appear to misstate the distinction between elemental, organic, and inorganic. The Minimata Bay tragedy and other reports of human teratogenesis, are associated with the organic form, methylmercury. The authors comment that elemental mercury poisoning in the modern era can occur through exposure to thimerosal. Thimerosal is an organic mercury compound. More importantly, however, the US Institute of Medicine has given no credence to the association of the use of this preservative and any adverse health effects. (2) Propagation of such a notion only contributes to the misinformation surrounding

vaccine safety.

Lastly, the treatment of true mercury poisoning is very controversial. For significant poisonings of organic or inorganic mercury, chelation may be used. While this may decrease mercury concentrations in the blood, studies have not consistently shown clinical improvement. Chelating agents that have been used include 2,3-Dimercapto-1-propanesulfonic acid (DMPS), 2,3-Dimercaptosuccinic acid (DMSA), British Anti-Lewisite (BAL), and D-penicillamine. Although the regimen used in this case may be reasonable, the combination of bicarbonate lavage, British Anti-Lewisite and D-penicillamine is far from standard of care and potentially harmful. While the child was extremely ill upon presentation, the chelating treatments and other interventions used may have added to the seriousness of the child's condition. (3)

The authors stated that this was a homicidal poisoning, but provide no further information. Was there a confession? What was/were the route by which this unfortunate child came to be exposed to mercury, inhalation, ingestion, and – possibly – transurethral routes? Clearly this is a dramatic case which warrants full investigation.

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#### References :

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