LETTERS TO THE EDITOR

Chelation Therapy for Kidney Transplant Recipients With Lead Exposure

To the Editor:

We read with interest the article of Sotomayor et al. According to the researchers, pretransplant plasma lead concentrations, which decrease after kidney transplantation, are associated with increased risk of late kidney allograft failure. The finding is useful and stimulating, as it carries the implication of potential chelation therapy for kidney transplant recipients with lead exposure. Nevertheless, there are several untapped issues associated with this observational study.

First, plasma specimens were used in the study for evaluation of body exposure to lead, cadmium, and arsenic. Plasma samples are suboptimal, and instead whole blood samples should be collected for analysis. A previous study confirmed that lead level in whole blood is the ideal marker to distinguish between patients with different mean levels. Sommar et al found that plasma lead performed well in those with high exposure, such as lead workers, but at low exposures plasma lead was inaccurate. Second, apart from lead, cadmium, and arsenic, the body burden of mercury should also be examined, as excess of mercury is also correlated with poorer kidney outcomes. Third, it is suggested newer hydrophilic dithiol chelators—for example, meso-2,3-dimercaptosuccinic acid (DMSA) or 2,3-dimercapto-propanesulphonate (DMPS)—be considered for kidney transplant recipients with confirmed lead exposure. In this regard, although a blood lead reference value of 10 μg/dL is commonly used in adults, no safe blood lead level has been recognized. Therefore, the harmful effects of lead at any detectible level should not be ignored.

Ju-Shao Yen, MD and Tzung-Hai Yen, MD, PhD

Article Information

Authors’ Affiliations: Departments of Dermatology (J-SY) and Nephrology (T-HY), Chang Gung Memorial Hospital, Linkou, Taoyuan, Taiwan; and College of Medicine, Chang Gung University, Taoyuan, Taiwan (J-SY, T-HY).

Financial Disclosure: The authors declare that they have no relevant financial interests.

Peer Review: Received August 19, 2022. Accepted August 29, 2022, after editorial review by an Associate Editor and a Deputy Editor.

Publication Information: © 2022 by the National Kidney Foundation, Inc. Published online October 24, 2022 with doi 10.1053/j.ajkd.2022.08.024

References


In Reply to "Chelation Therapy for Kidney Transplant Recipients With Lead Exposure"

We are grateful to Drs Ju-Shao Yen and Tzung-Hai Yen for their appraisal of our article. The authors suggest that plasma samples are suboptimal for body exposure evaluation compared to whole-blood samples, based on a study in which within- and between-variation of various lead biomarkers were compared using inductively coupled plasma mass spectrometry equipment introduced in 2001. Given the tremendous and still ongoing improvements in this field, the only valid conclusion of the study from Sommar et al is that total variance in whole-blood lead concentrations is largely attributable to inter-individual differences; in terms of plasma concentrations, the equipment that was used does not allow for valid conclusions that can be extended to more recent equipment. An equipment-independent way to judge between the use of plasma or whole-blood lead samples for body exposure evaluation would be to assess the longitudinal association of exposure with different health effects, but the work by Sommar et al did not address this question. Importantly, previous studies suggest a stronger correlation for plasma rather than whole-blood specimens, advocating for the use of the former. We previously argued that plasma concentrations of heavy metals reflect the fraction most freely available to form the ultrafiltrate to which kidney tubular epithelial cells are exposed, and which would be the source of toxicity. We now applied the same line of reasoning to lead exposure, like others did before. It should furthermore be underlined that we studied kidney transplant recipients rather than the general population. Our article discusses how the posttransplant osteodystrophy common to transplant recipients may argue for use of plasma samples. Despite these considerations, we acknowledge that the question of which biomarker can best