LETTER TO THE EDITOR

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[1] of our article.[2] 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.[3] Given the tremendous and still ongoing improvements in this field, the only valid conclusion of the study from Sommar et al[3] 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.[4,5] 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.[6] We now applied the same line of reasoning to lead exposure, like others did before.[7] 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.[2] Despite these considerations, we acknowledge that the question of which biomarker can best assess the prospective association with graft function decline still needs to be delineated and would be an interesting one to address.

Finally, while we previously found no evidence for a cross-sectional association between plasma mercury and kidney function,[8] a potential prospective association cannot be excluded and likewise warrants further studies.

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Article Information

TransplantLines Investigators: A list of the members of this investigator group is provided in Sotomayor et al.[2]

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References

1. Yen J-S, Yen T-H. Chelation therapy for kidney transplant recipients with lead exposure. Letter. *Am J Kidney Dis*. Published online October 24, 2022. doi:10.1053/j.ajkd.2022.08.024
2. Sotomayor CG, Giubergia F, Groothof D, et al. Plasma lead concentration and risk of late kidney allograft failure: findings from the TransplantLines Biobank and Cohort Studies. *Am J Kidney Dis*. 2022;80(1):87-97.e1. doi:10.1053/j.ajkd.2021.10.009
3. Sommar JN, Hedmer M, Lundh T, et al. Investigation of lead concentrations in whole blood, plasma and urine as biomarkers for biological monitoring of lead exposure. *J Expo Sci Environ Epidemiol*. 2014;24(1):51-57. doi:10.1038/jes.2013.4
4. Lamadrid-Figueroa H, Téllez-Rojo MM, Hernández-Cadena L, et al. Biological markers of fetal lead exposure at each stage of pregnancy. *J Toxicol Environ Health A*. 2006;69(19):1781-1796. doi:10.1080/15287390600630195
5. Bergdahl IA, Vahter M, Counter SA, et al. Lead in plasma and whole blood from lead-exposed children. Environ Res 1999;80(1):25-33. doi:10.1006/enrs.1998.3880
6. Sotomayor CG, Groothof D, Vodegel JJ, et al. Plasma cadmium is associated with increased risk of long-term kidney graft failure. *Kidney Int*. 2021;99(5):1213-1224. doi:10.1016/j.kint.2020.08.027
7. Smith D, Hernández-Ávila M, Téllez-Rojo MM, et al. The relationship between lead in plasma and whole blood in women. *Environ Health Perspect*. 2002;110(3):263-268. doi:10.1289/ehp.02110263
8. Sotomayor CG, Gomes-Neto AW, Gans ROB, et al. Fish intake, circulating mercury and mortality in renal transplant recipients. *Nutrients*. 2018;10(10):1419. doi:10.3390/nu10101419