LETTERS TO THE EDITOR

Low Birth Weight: Intrauterine Growth Restriction or Prematurity?

To the Editor:

With great interest we read the article from Eriksson et al[1] confirming the relation between low birth weight and adult chronic kidney disease (CKD). The Helsinki Birth Cohort Study forms a unique cohort given its large size and extensive follow-up. Linking this cohort with *International Classification of Diseases* codes and different registries, the authors found a significant hazard ratio (HR) of 0.8 for every additional standard deviation in birth weight on the outcome of CKD. Second, a significant HR of 2.6 for CKD risk was reported for adults born before 34 weeks of gestational age compared with those born at term.

Nonetheless, it remains unclear whether the association between birth weight and CKD resulted from prematurity, low birth weight for gestational age, or the combination. The authors state that a low nephron number as a result of prematurity could be responsible for the increased CKD risk.[2] However, other studies have mentioned an increased risk for hypertensive disease in those born after intrauterine growth restriction (based on birth weight percentiles),[3,4] which could in turn be responsible for an increased risk for CKD and end-stage renal disease.[5] Consequently, it seems appropriate, if possible, to correct the analyses in Tables 2 and 4 of the article for confounding by gestational age at birth and use birth weight percentiles instead of absolute values.[5] This might help solve the question of whether intrauterine growth restriction or prematurity is more strongly related to CKD in later life.

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

Peer Review: Received January 8, 2018. Accepted January 10, 2018, after editorial review by a Deputy Editor.

 Published online March 30, 2018 with doi 10.1053/j.ajkd.2018.01.045

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In Reply to 'Low Birth Weight: Intrauterine Growth Restriction or Prematurity?'

We thank Drs Kooiman, Terstappen, and Lely[1] for their interest and for giving us this opportunity to provide more data from the Helsinki Birth Cohort Study.[2]

Following their suggestion, we constructed a sex- and gestational age–adjusted standardized score for each birth weight. Table 1 shows hazard ratios (HRs) for chronic kidney disease (CKD). The first 2 rows repeat data from our published article.[2] There is little evidence for association with gestational age. The HR for 1 standard deviation of birth weight is 0.82 (95% confidence interval, 0.74-0.91; $P < 0.001$), mostly due to the association observed in men. The new gestation-adjusted birth weight has a much more attenuated association with CKD, which remains more negative among men. Using gestation and the gestation-adjusted birth weight in combination enables reconstruction of the absolute birth weight. In the joint model, the gestation-adjusted variable has a somewhat weaker HR for CKD than that obtained from birth weight alone.

Table 4 of our article[2] illustrates the absence of association with gestational age overall, but shows the high HRs for CKD in both men and women born before 34 completed weeks, as highlighted by Kooiman et al. However, <1% of the surviving Helsinki Birth Cohort Study members are born this early, making the fraction of CKD attributable to this exposure small in this population. It may be somewhat larger in populations born today. For example, 2.7% of all US infants are born before 34 weeks,[3] and >99% of them survive infancy.

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

Peer Review: Received January 16, 2018. Accepted January 24, 2018, after editorial review by a Deputy Editor.

Table 1. Association of Neonatal Measurements and Kidney Disease

Neonatal Measurement (Standardized Units)	Men and Women			Men			Women			*P* for Interaction
	HR	95% CI	*P*	HR	95% CI	*P*	HR	95% CI	*P*	
As in published table										
Gestational age	0.99	0.89-1.10	0.8	0.95	0.83-1.09	0.4	1.05	0.89-1.24	0.6	0.4
Birth weight	0.82	0.74-0.91	<0.001	0.73	0.64-0.83	<0.001	0.99	0.84-1.16	0.9	0.004
New analyses										
Gestation-adjusted birth weight	0.98	0.90-1.07	0.7	0.90	0.79-1.01	0.08	1.08	0.97-1.21	0.2	0.02
Joint model										
Gestational age	0.98	0.88-1.09	0.7	0.92	0.80-1.06	0.3	1.05	0.89-1.24	0.5	0.3
Gestation-adjusted birth weight	0.87	0.79-0.97	0.009	0.78	0.68-0.89	<0.001	1.03	0.88-1.20	0.8	0.01

Note: The Cox model is stratified on combinations of sex and year of birth and also includes early-life and adult socioeconomic status.
Abbreviations: CI, confidence interval; HR, hazard ratio.

Publication Information: © 2018 by the National Kidney Foundation, Inc. Published online March 30, 2018 with doi 10.1053/j.ajkd.2018.01.046

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Thoracic Ultrasound Artifacts: Still a Matter of Discussion

To the Editor:

We enjoyed the exhaustive narrative review by Covic et al.[1] We particularly appreciated the caution expressed regarding clinical interpretation of B-lines, which are lung ultrasound artifacts, because many recent articles have endorsed the validity of counting artifacts for the diagnosis of pulmonary edema or any extravascular lung water. This is troubling because such findings lack disease specificity.[2] Whatever the cause, B-lines are mostly generated when the ultrasound beam crosses areas of difference in acoustic impedance (chest wall vs air) that reduce the propagation speed of the ultrasound beam. Manufacturers' calibration of ultrasound devices is usually based solely on the speed of sound in tissues of the chest wall (~1,500 m/s), whereas the propagation speed is much lower in other structures within the chest (~400 m/s air in the interstitium, bronchi, vessels, and lymphatic tissue).[3] Moreover, these artifacts may be affected by heart and respiratory movements, the thickness of subcutaneous tissue due to fat and edema, and emphysema. These artifacts are detectable even in the postpneumonectomy space, containing residual air, liquid films and/or edema, and scar tissue. Their detection can also be modified by an increase in the pleural line movement rate in dyspneic patients and by concomitant heart and lung disorders.[4] Consequently, the detection of B-lines remains largely subjective and at best semiquantitative, and it is questionable whether a firm relationship between the number of B-lines and a specific disease can be established.[5]

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

Peer Review: Received January 16, 2018. Accepted January 19, 2018, after editorial review by a Deputy Editor.

Publication Information: © 2018 by the National Kidney Foundation, Inc. Published online March 28, 2018 with doi 10.1053/j.ajkd.2018.01.050

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