Pediatric Nephrology
https://doi.org/10.1007/s00467-024-06280-1

EDITORIAL COMMENTARY

A(nother) plea for better management of post-transplant cardiovascular morbidity

Haley Ehrle[1] · Jens Goebel[2]

Received: 17 November 2023 / Revised: 28 December 2023 / Accepted: 29 December 2023

In this issue of our journal, Zangla et al. describe their retrospective, single-center experience regarding lipid abnormalities in their program's pediatric kidney transplant recipient population [1]. The unique value of Zangla et al.'s paper is its characterization of such abnormalities in patients who were essentially not treated with steroids. Not surprisingly because these patients did receive calcineurin inhibitors and obviously have severe kidney disease, both of which also increase the risk for lipid abnormalities [2], the authors still observe a significant incidence of such abnormalities. Moreover, they document a relative lack of attention to or even intervention for these dyslipidemias in their program.

As Zangla et al. confirm, dyslipidemias are known to be a prevalent challenge in our pediatric kidney transplant recipients. The incidence of such dyslipidemias in this population depends to some extent on the definition used for dyslipidemia, and the authors use rather strict criteria compared to other published information [2], but that does not alter the fact that our pediatric transplant recipients face a real problem regardless of its exact quantification. Moreover, lipid abnormalities are only one facet of the composite cardiovascular disease (CVD) burden on this patient population. Other contributors include hypertension, obesity, and glucose intolerance [3]. CVD burden, in turn, is a major cause of morbidity and mortality in our pediatric (and of course adult) kidney and other transplant recipients [4].

What is therefore most noteworthy and concerning in our mind is the lack of attention to this problem Zangla et al. document in their paper. Unfortunately, their observation that CVD is poorly managed by us pediatric kidney transplant providers is not new [3, 5]. It is especially mindboggling that our programs do such a poor job managing CVD risk in these patients of ours even though we have ample tools readily available to utilize for this management: We can check serum lipids and have lipid-lowering therapies at our fingertips [2]. Obviously, the same holds true for hypertension with the availability of echocardiograms to look for left ventricular hypertrophy and aortic root dilation [6], of 24-h ambulatory blood pressure measurements (ABPMs) to really know what our patients' blood pressure is doing [7], and of course the time-tried and effective antihypertensive agents we should easily be able to use to treat detected hypertension in these patients [8]. Lastly, healthy nutrition as part of a therapeutic lifestyle can also be a staple in dealing with this challenge as outlined below.

While Zangla et al. did not incorporate ABPM data into their analysis but used a classification of "medication-treated hypertension," ABPM is especially valuable in our pediatric kidney transplant recipients: This population is at high (estimated between 40 and 80%) risk for hypertension, including nocturnal and masked hypertension [7]. For these reasons, it is prudent to utilize ABPMs in standard practice post-transplant regardless of clinic (or even home) blood pressures [7, 8]. Once true hypertension is detected and treatment initiated, follow-up ABPMs will at times also be helpful to ascertain that management is effective.

The etiology of post-transplant dyslipidemia is multifactorial, and Zangla et al. discuss this in depth. We would like to additionally emphasize one other contributor to this dyslipidemia: diet. Once transplanted, we often recommend a "transplant" diet in replacement of the "kidney" diet pre-transplant to our patients and families. While geared quite a bit towards food safety in the context of immunosuppression, this transplant diet is typically somewhat liberal in the allowance of food groups in comparison to the kidney diet, and the liberalization potentially allows for more packaged and processed foods that are higher in sodium. Accordingly,

✉ Jens Goebel
jens.goebel@helendevoschildrens.org

[1] Departments of Pediatrics and Graduate Medical Education, Michigan State University, Helen DeVos Children's Hospital, Grand Rapids, MI, USA

[2] Department of Pediatrics, Section of Pediatric Nephrology, Michigan State University, Helen DeVos Children's Hospital, 100 Michigna St. NE, Grand Rapids, MI 49503, USA

Published online: 22 January 2024

one of the main differences, and potentially a contributor to hypertension in our patients, is this liberalization of sodium intake, in addition to rather standard recommendations for pediatric kidney transplant recipients to more or less eat what a child without kidney disease should eat, as long as it is healthy and paired with exercise [9]. Additionally, an increase in appetite is seen in many children post-transplant (possibly related to improved sense of taste once the patient is no longer uremic and on dialysis) [10, 11]. Our post-transplant population is therefore clearly at increased "dietary" risk for dyslipidemia.

We therefore need to step up our efforts to do a better job identifying, characterizing, and managing CVD morbidity risk in our pediatric kidney transplant recipients. Along these lines, and given our past—and present per Zangla et al.—failures [3, 5], it is time to leverage novel approaches for such efforts, i.e., quality improvement (QI): If we have the tools to detect and treat CVD morbidity and are still not doing it effectively, there must be an implementation problem related to reliability and consistency that would benefit from the application of QI strategies! Not surprisingly, and as just one example, the Improving Renal Outcomes Collaborative (IROC, irocnow.org, founded several years ago) aims to do just that: Applying QI and population management principles to the management of the problems facing our pediatric kidney transplant recipients (and beyond) [12], and preliminary results have been quite encouraging as published [13, 14].

In summary, Zangla et al. confirm and expand on the importance of CVD risk, especially dyslipidemia, in children with kidney transplants, even if these children are not on steroids. They also remind us once again that we have room for much improvement to address this risk. Options to do so exist but are underutilized, so let us change that and keep our kidney transplant recipients' CV health at the forefront of what we are doing clinically and really and reliably leverage what is out there in terms of tools and resources to do so!

Declarations

Conflict of interest JG is a board member of the Improving Renal Outcomes Collaborative (IROC). HE does not have any conflicts of interest.

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