Clinical Kidney Journal

Clinical Kidney Journal, 2019, vol. 12, no. 4, 574–575

doi: 10.1093/ckj/sfz060
Advance Access Publication Date: 5 June 2019
Letter to the Editor

LETTER TO THE EDITOR

Incorporating apolipoprotein L1 testing into evaluation of potential living kidney donors: a single-centre experience

Jonathan Dick, Elham Asgari, Paramit Chowdhury, Anita Copley, Isobel Gordon, Rachel Hilton, Christina Horpos, Lisa Silas, Miri Vutabwarova and Refik Gökmen

Department of Nephrology and Transplantation, Guy's Hospital, Guy's and St Thomas' NHS Foundation Trust, London, UK

Correspondence and offprint requests to: Refik Gökmen; E-mail: refik.gokmen@gstt.nhs.uk

Assessment of future risk of end-stage renal disease (ESRD) is an important component of evaluation of potential living kidney donors. Known donor risk factors for ESRD include first-degree relatives, young age, male sex and African descent [1]. In the general population, the presence of two apolipoprotein L1 (APOL1) risk alleles is a key determinant of the excess incidence of ESRD observed in African Americans [2]. In living kidney donors, the effect of the APOL1 genotype on the risk of developing ESRD is unknown. However, the higher risk in black donors and the faster decline in estimated glomerular filtration rate (eGFR) observed post-donation in donors with two APOL1 risk alleles [3] suggests that this group should be considered with caution. The APOL1 Long-term Kidney Transplantation Outcomes Network (APOLLO) study (NCT03615235) aims to provide prospective data to guide these decisions in the future. In the current absence of prospective data, some centres screen for APOL1 risk alleles in potential donors of African descent. A recent survey of US transplant surgeons and physicians reported that 63% of them intended to use APOL1 testing in the next year [4]. Patient perspectives of APOL1 testing in potential donors are also supportive of this approach [5, 6]. The experience of a policy of testing APOL1 risk alleles in potential donors has not been previously reported.

Potential living donors with African ancestry ($n = 20$) assessed at our centre since 2016 were genotyped for APOL1 risk alleles (performed by Nephrology Molecular Genetics Laboratory, Weißwasser, Germany). Summary data, including potential donor characteristics, estimated lifetime risk of ESRD and assessment outcome, are presented in Table 1.

In this cohort, 30% of potential donors had two APOL1 risk alleles. This is greater than the population allele frequency but similar to the reported prevalence in first-degree relatives of patients with ESRD [7]. Our practice is to estimate donor ESRD risk using both pre- and post-donation calculators available at www.transplantmodels.com. The available risk calculators are limited by incorporating race but not APOL1 genotype as a variable. While APOL1 status is an important determinant of chronic kidney disease (CKD) risk in young African American potential donors [8], there are currently insufficient data to inform how to incorporate APOL1 status into quantitative risk assessment models.

While clinical characteristics and calculated estimated lifetime risk of ESRD were similar between groups, no potential donors with an APOL1 risk genotype were approved for donation. While we do not consider the APOL1 risk genotype to be an absolute contraindication to donation, we have exercised a high degree of caution in counselling these patients—particularly young donors—about the additional risk. In our experience, the information that kidneys from donors with an APOL1 risk

Received: 21.3.2019; Editorial decision: 17.4.2019

Table 1. Summary data of potential donors assessed

Characteristic	All	0–1 risk alleles	2 risk alleles
Patients, *n*	20	14	6
Age (years), median (range)	38 (24–58)	34.5 (24–57)	41 (29–58)
Gender, *n*	11 F, 9 M	7 F, 7 M	4 F, 2 M
Related to recipient, *n/N*	19/20	13/14	6/6
eGFR by CKD-EPI (mL/min/1.73 m^2), median (range)	95 (66–118)	92 (66–118)	102 (66–108)
Projected pre-donation lifetime risk of ESRD (%) (www.transplantmodels.com), median (range)	1.13 (0.28–8.7)	1.31 (0.28–8.7)	1.09 (0.3–2.9)
Projected post-donation 20-year risk of ESRD (%) (www.transplantmodels.com), median (range)	1.12 (0.49–2.80)	1.22 (0.49–2.80)	0.95 (0.52–2.49)
Medical contraindication to donation, *n/N*	5/20	3/14	2/6
APOL1 genotype main factor precluding donation, *n/N*	4/20	0/14	4/6

M, male; F, female; CKD-EPI, Chronic Kidney Disease Epidemiology Collaboration.

genotype have inferior graft survival [9], rather than excess risk to the donor, was an important factor in the decision of identified at-risk individuals not to proceed to donation.

As the majority of people with high-risk genotypes develop neither CKD nor ESRD, APOL1 testing is likely to further reduce living donor participation in a population that already has lower living donor rates than the general population. In potential donors found to have a high-risk genotype, optimal follow-up is uncertain, there is the potential for psychological distress and there are implications for future insurance coverage. Conversely, a low-risk genotype permits reassurance to donors that their lifetime risk of ESRD will be not higher than suggested by models that include African descent as a risk factor and thus enhances decision making. Overall, APOL1 testing enhances risk stratification of living donors and improves the informed consent process.

CONFLICT OF INTEREST STATEMENT

None declared.

REFERENCES

1. Massie AB, Muzaale AD, Luo X *et al*. Quantifying postdonation risk of ESRD in living kidney donors. *J Am Soc Nephrol* 2017; 28: 2749–2755
2. Genovese G, Friedman DJ, Ross MD *et al*. Association of trypanolytic ApoL1 variants with kidney disease in African Americans. *Science* 2010; 329: 841–845
3. Doshi MD, Ortigosa-Goggins M, Garg AX *et al*. APOL1 genotype and renal function of black living donors. *J Am Soc Nephrol* 2018; 29: 1309–1316
4. Gordon EJ, Wicklund C, Lee J. A national survey of transplant surgeons and nephrologists on implementing apolipoprotein L1 (APOL1) genetic testing into clinical practice. *Prog Transplant* 2018; 267: 1161–1168
5. Umeukeje EM, Young BA, Fullerton SM. You are just now telling us about this? African American perspectives of testing for genetic susceptibility to kidney disease. *J Am Soc Nephrol* 2019; 30: 526–530
6. Gordon EJ, Amórtegui D, Blancas I *et al*. African American living donors' attitudes about APOL1 genetic testing: a mixed methods study. *Am J Kidney Dis* 2018; 72: 819–833
7. Freedman BI, Langefeld CD, Turner J *et al*. Association of APOL1 variants with mild kidney disease in the first-degree relatives of African American patients with non-diabetic end-stage renal disease. *Kidney Int* 2012; 82: 805–811
8. Locke JE, Sawinski D, Reed RD *et al*. Apolipoprotein L1 and chronic kidney disease risk in young potential living kidney donors. *Ann Surg* 2018; 267: 1161–1168
9. Freedman BI, Pastan SO, Israni AK *et al*. APOL1 genotype and kidney transplantation outcomes from deceased African American donors. *Transplantation* 2016; 100: 194–202

Clinical Kidney Journal
ckj