COMMENTS AND RESPONSES

Comment on: Chakkera et al. Pretransplant Risk Score for New-Onset Diabetes After Kidney Transplantation. Diabetes Care 2011;34:2141–2145

We read with interest the article by Chakkera et al. (1), which presented a pretransplant risk score to help identify subjects who might develop new-onset diabetes after kidney transplantation (NODAT). Although the authors briefly discussed the limitations of their diagnostic criteria of NODAT, they did not elaborate on how the exclusion of an oral glucose tolerance test (OGTT) might impact the external validity and generalizability of the study.

First, the authors documented the absence of diabetes before transplantation by assessing the forms submitted to the United Network for Organ Sharing. In addition, at pretransplant testing all patients had a fasting plasma glucose (FPG) <126 mg/dL (7.0 mmol/L) and a glycosylated A_{1c} (HbA_{1c}) <6.5%. We believe that this strategy might have grossly underestimated the true incidence of pretransplant diabetes. In a recent study of 889 consecutive kidney transplant candidates without known diabetes, we assessed the prevalence of undiagnosed diabetes using pretransplant levels of FPG and 2-h plasma glucose obtained by an OGTT (2). Only 22% of the patients diagnosed with diabetes had an FPG ≥126 mg/dL, indicating a poor sensitivity of FPG for detecting diabetes pretransplant. Moreover, HbA_{1c} correlated poorly with the OGTT. A post hoc analysis of the data showed that <13% of the patients with diabetes had an HbA_{1c} ≥6.5%, whereas among all patients having HbA_{1c} ≥6.5%, 82% had a nondiabetic FPG and OGTT result. HbA_{1c} is at present not recommended as a diagnostic tool in patients with severe renal failure, partly because of changes in red cell turnover, anemia, acidosis, and usage of erythropoietin (3).

Second, the authors defined NODAT as either HbA_{1c} ≥6.5%, FPG ≥126 mg/dL, or prescribed therapy for diabetes within 1 year posttransplant. The usage of HbA_{1c} for the diagnosis of NODAT does not comply with the current guidelines that consider HbA_{1c} not to be sensitive enough for this purpose (4). Renal transplant recipients with NODAT are probably best identified by an OGTT (5). In a large study of 1,571 consecutive Norwegian renal transplant recipients who underwent an OGTT at 10 weeks posttransplant, FPG identified only half of the recipients with NODAT (5). In a post hoc analysis of data from this study, a threshold of HbA_{1c} ≥6.5% to diagnose NODAT would result in a low sensitivity of 42%, a specificity of 96%, a positive predictive value of 51%, and a positive diagnostic likelihood ratio of 9.9 (6). Thus, the majority of recipients with NODAT had an HbA_{1c} <6.5% and would remain undetected by this diagnostic approach. Based on these findings, we hypothesize that a diagnostic threshold of HbA_{1c} ≥6.5% might be too high at least in the early posttransplant period.

In conclusion, by excluding the OGTT, the authors have most likely underestimated the number of patients with diabetes both before and after transplantation. Accordingly, the pretransplant risk score for development of NODAT needs validation in populations where an OGTT is used.

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References

1. Chakkera HA, Weil EJ, Swanson CM, et al. Pretransplant risk score for new-onset diabetes after kidney transplantation. Diabetes Care 2011;34:2141–2145
2. Bergrem HA, Valderhaug TG, Hartmann A, et al. Undiagnosed diabetes in kidney transplant candidates: a case-finding strategy. Clin J Am Soc Nephrol 2010;5:616–622
3. Sharif A, Baboolal K. Diagnostic application of the A(1c) assay in renal disease. J Am Soc Nephrol 2010;21:383–385
4. Davidson J, Wilkinson A, Dantal J, et al.; International Expert Panel. New-onset diabetes after transplantation: 2003 international consensus guidelines. Proceedings of an international expert panel meeting. Barcelona, Spain, 19 February 2003. Transplantation 2003;75(Suppl. 10):SS3–SS24
5. Valderhaug TG, Jenssen T, Hartmann A, et al. Fasting plasma glucose and glycosylated hemoglobin in the screening for diabetes mellitus after renal transplantation. Transplantation 2009;88:429–434
6. Hjelmesæth J, Valderhaug TG. Screening and diagnosis of new-onset diabetes after renal transplantation. In *Treatment Strategies—Diabetes*. London, The Cambridge Research Centre, 2010, p. 163–168. Available from http://viewer.zmags.com/publication/ad06b13c#/ad06b13c/162. Accessed 19 October 2011