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INVITED COMMENTARY

Who needs a pancreas donor risk index?*

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Of all vascularized organ transplant procedures, pancreas transplantation is plagued with the highest incidence of so-called technical complications, often resulting in early graft loss. Up to 10% of pancreas grafts are lost from non-immunologic causes within the first 3 months after transplantation, the most dreaded being graft thrombosis [1]. Elucidating the risk factors for technical failure and preventing its occurrence has been a major endeavor for all pancreas transplant teams over the past decades. Ischemia–reperfusion injury is a key mechanism of technical complications and can be mitigated by decreasing preservation time. Other factors have long been identified for their impact on immediate technical complications. The most critical are donor-related, namely donor older age and overweight/obesity [2,3]. Understandably, based on this erstwhile knowledge, and thanks to the availability of large transplant databases, investigators have strived to develop donor scores able to estimate the—mostly technical—risk associated with transplanting a particular organ.

The first tentative score was the P-PASS (preprocurement pancreas suitability score) from the Eurotransplant zone [4]. Unfortunately, this score was designed based on acceptance criteria by transplant surgeons rather than on outcomes and proved unreliable in predicting graft failure of high-score organs [5,6]. A second score, the pDRI (pancreas donor risk index) computed from the Scientific Registry of Transplant Recipients (SRTR) donor and outcome data, was more recently developed in the United States [7]. The article by Mittal *et al.* published in this issue of *Transplant International* validates the pDRI score in a cohort from the United Kingdom [8] and argues that it can be used as a tool to predict graft survival in their population.

This interesting study is undoubtedly of value, but raises a few questions. First, validation of the pDRI was obtained only for SPK (simultaneous pancreas–kidney) transplant procedures, and not for PTA (pancreas transplant alone) and PAK (pancreas-after-kidney). This is possibly due to lack of power, the UK cohort being about 10-fold smaller than the US, but is also unfortunate for a risk assessment index, as technical failure rates are approximately doubled in PTA/PAK as compared to SPK [1].

A second issue is perhaps of a more philosophical nature. In spite of improving outcomes, numbers of whole pancreas transplants have decreased by >30% in the US since 2005 [1]. Although reliable international data are unavailable, this trend is possibly happening worldwide. Explanations are manifold, but may include recent refinements in medical management with new insulin formulations, and pump- and sensor-assisted insulin delivery. These allow better control of brittleness and slower progression of microangiopathic complications, which are the major indications for beta-cell replacement. This is essentially good news, but is unlikely to explain the whole drop in pancreas transplant activity. Recent pessimistic reports about pancreas transplant peri-operative mortality [9] and improvements of islet transplantation outcomes [10] could have driven some candidates for whole pancreas transplantation to opt for islets instead. However, the current low levels of islet transplant activity refute this hypothesis.

The worrisome point is that the declining pancreas transplant activity may be a reflection of the progressive increase of donor age and BMI, key determinants of technical failure and key components of the pDRI. In times of discourses of "accountable healthcare" and growing scrutiny by regulatory authorities, transplant surgeons and physicians are increasingly tempted—or even led—to adopt risk aversion strategies, which translates, in the example of pancreas transplantation, into inclinations to reject a suboptimal organ that might nonetheless have resulted in a successful outcome, in order to avoid early graft loss to technical complications [11]. While the pDRI may allow for the identification of either optimal or poor quality pancreas donors at the extremes, there are not sufficient follow-up validation data to substantiate its ability to stratify the average risk donor who may have some variables that elevate the pDRI score, yet provide potentially good quality organs. The pDRI appeared as a timely screening tool to implement the objective of optimization of donor selection, but, for reasons mentioned above, may not have always yielded the desired outcome. Thus, the pDRI may unintentionally have served as a convenient tool, not always used for the right reasons. The near-synchronicity of the start of decline of pancreas transplantation volumes and the introduction of the pDRI may be more than pure coincidence.

To end this commentary with a more positive outlook, let us acknowledge that the pDRI was not designed to provide on-call physicians with a cut-off accept-or-reject index value. Its utility will lie in its cautious use as an aid in the risk/benefit assessment of the transplant of a particular organ to a particular recipient. It is also encouraging that this study should come from a pancreas transplant team that has had among the highest activity worldwide in recent years and has championed the use of marginal donors, including donors with circulatory death (DCDs) [12], in order to maintain or even increase their transplant numbers, without taking a toll on quality of outcomes.

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