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INVITED COMMENTARY

The elderly pancreas transplant recipient

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In this issue of Transplant International, Scalea *et al.* [1] presented the outcome of pancreas transplantation in elderly patients. This was a retrospective analysis of a small group of patients older than 55 years (n = 28), transplanted over a period of 14 years in a cohort of 740 patients at the University of Wisconsin. Of the 28 patients, 11 underwent combined pancreas and kidney transplantation (SPK) and 17 underwent pancreas transplantation alone (PTA) or after kidney transplantation (PAK). They concluded that even in patients older than 55 years, acceptable results can be achieved through pancreas transplantation. Both patient selection and a rigorous pre-operative cardiac evaluation are of great importance due to the increased vascular morbidity of long-term diabetic patients. However, one possible advantage observed by the authors is that a lower rejection rate was found in the elderly, which may be a result of the phenomenon 'Immunosenescence' [1].

This is not the first study on the subject of pancreas transplantation in the elderly; hence, the result is even less surprising. Besides some retrospective single-centre analyses [2–4] that came to similar conclusions, a UNOS database review of 20 854 patients exists and includes 3160 patients between 50 and 59 years and 280 over 60-year old at the time of transplantation [5]. In this register-based analysis, an increasing patient age correlated with a significant decrease in patient and graft survival, especially in the group aged over 60 years. Nevertheless, the authors did not consider an age of over 60 years to be a criterion for exclusion per se, because after transplantation, the patients had a longer survival compared to insulin-dependent diabetic patients and especially diabetics on dialysis. They suggested that age is not a contraindication to pancreas transplantation, but age-related comorbidity is an important limiting factor [5].

The work by Scalea *et al.* in this issue again confirms the current state of knowledge, as in centres with extensive experience of pancreas transplantation, nearly similar results can be achieved in the elderly. This is in contrast to the results of the UNOS database analysis by Siskind *et al.* [5] and possibly indicates the impact of the centre size. Furthermore, this article provides a good overview of the performed age-dependent pre-operative cardiac diagnostic before pancreas transplantation and

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the resulting therapeutic consequences, such as angioplasty and stent angioplasty. Among the group of patients aged over 55 years, 64.3% of patients were catheterized diagnostically, of which in turn, 40% received an intervention.

The rate of pre-operative invasive coronary diagnostics is significantly higher at our own centre than at the University of Wisconsin. At our centre, where the proportion of those over 50-year old has been about 35% over the past decade in terms of pancreas transplantation, performing an angiography is now obligatory for each patient aged over 50 years before being put on the waiting list. Consequently, this causes a high intervention rate and a prolonged waiting time for transplantation. It is often necessary to perform stent angioplasty using drug-eluting stents, which makes dual antiplatelet therapy essential. Even if it leads to an extension of the waiting period of patients, in recent years we have moved away from carrying out any pancreas transplantation under existing dual antiplatelet therapy. This only leads to disaster, both surgically and cardiologically.

Unlike pancreas transplantation in Germany where the proportion of simultaneous pancreas–kidney transplantation is predominant in more than 90% of cases [6], the proportion of SPK transplants performed in patients from Scalea *et al.*'s study was low at 75%. In the group over 55 years, the proportion of SPK transplants was only 39.3%. This is relevant and it should be considered when interpreting this previous study's results, because one of the risk factors with the highest impact on patient survival is end-stage renal disease. Thus, better patient survival is achieved after PTA or PAK [7]. Therefore, when calculating the risks and interpreting the results, 'Pancreas transplantation is not just pancreas transplantation'. The type of transplantation (PTA and PAK or SPK) is significant; therefore, the results should be considered separately for each group.

In recent years, we have observed an increasing age among all recipients of organ transplants, especially for pancreas transplantation [6]. Advances in insulin therapy, better self-control of blood glucose levels, organ-protective and antiproteinuric medications such as angiotensin-converting enzyme inhibitors or angiotensin receptor blockers, a more rigorous control of blood pressure and many other measures have aided in postponing diabetic complications. Accordingly, at the time of the first visit to the transplant centre, patients are often already older than 50 years, which is an age limit that many centres have previously defined as a contraindication for pancreas transplantation. However, this age limit is no longer relevant. The numerical age is pushed into the background, as it only counts the biological age of the patient. Yet, the results justify the approach, because with modern surgical techniques, better intensive care and new potent drugs, elderly patients can undergo major transplant surgery and survive complicated postoperative courses.

Regardless, we must distinguish what is medically possible and what is ethically justifiable at a certain age. Additionally, an adequate and individualized diagnostic and risk assessment based on the patient's condition are equally important as the optimal surgical technique and individualized immunosuppression. The right balance between surgical risk-taking and caution, the preservation of patient autonomy and therapeutic limits, the patients' and family's wishes for meaningful therapy and the experienced transplant surgeon's evaluation remains great challenges of each surgeon and transplantation team.

In summary, we agree with the conclusions of Scalea and colleagues [1] that pancreas transplantation should be offered to older patients who do not have contraindications for major surgery, but patient selection and a rigorous pre-operative evaluation are of great importance. However, the question of at what age can pancreas transplantation be considered a life-prolonging therapy remains unanswered.

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