Editorial for a special issue on kidney transplant

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In the past 10 years, there has been a dramatic change within the kidney transplant population. The incidence and prevalence of end-stage renal disease (ESRD) have been consistently rising since the late 1980s. Furthermore, to make things more complex, the prediction is that in the next 10 years, people affected by ESRD will duplicate due to the increment of diabetes, obesity and high blood pressure (HBP). Due to the traffic accidents reduction (as low as they were in the 1960s), optimal young kidney donors are nowadays more and more an exception. Data from the Organización Nacional de Trasplantes (ONT) show that in Spain, traffic accidents reduced from 43 % in the 1990s to 6 % in 2012 and cerebrovascular accidents increased from 39 % in the 1990s to 62.2 % in 2012. From the kidney transplant point of view, this has led to the utilization of sub-optimal donors such as donors older than 60 or with high comorbidities. Despite this, the 5-year survival rate of patients transplanted from expanded criteria donors is significantly better than those on dialysis being 86.3 versus 67.3 %, respectively [1].

Furthermore, although there is raising evidence that kidneys coming from sub-optimal donors provide good graft survival, there are still controversial points to be clarified. For instance, it appears that sub-optimal kidneys may have a worse early graft function (EGF) and higher complication rate in the recipient than optimal kidneys. These assumptions have been confirmed with the recent data published by Barba et al. [2]. They analyzed a large

series of 407 kidney transplantations, 163 with expanded criteria (UNOS, 2002). Results revealed that recipients from expanded criteria donors had significant greater frequency of hospitalization because of medical problems and greater frequency of graft loss and delayed graft function (DGF). Moreover, recipient's age was the only factor with a significant association with surgical complications. Furthermore, expanded criteria recipients were associated with a higher risk of minor complication (Clavien I) and potentially life-threatening risk events (Clavien III and IV). Furthermore, it appears that transplants coming from expanded criteria donors may be associated with higher risk of graft loss; therefore, the number of patients undergoing a second transplantation may increase in the future. Whether or not this was true, approximately 10–20 % of renal transplants performed annually are re-transplants. It is still under debate whether an allograft nephrectomy should be performed prior to further kidney transplantation. Generally speaking, an early graft nephrectomy is performed in case of early graft failure. However, in case of late graft loss, the graft is left in place due to its contribution to the maintenance of residual diuresis and the lower risk of desensitization. Also, the non-functioning graft would catch HLA antibodies and reduce, together with the immunosuppression therapy, the formation of antibodies. Recent data from Lucarelli et al. [3] have demonstrated that allograft nephrectomy prior to re-transplantation does not have significant influence in the five-year graft survival (90 vs. 89 %). Furthermore, patients with prior nephrectomy present a significant higher risk of complications. Despite these controversial debates, there is no doubt that kidney transplant centers have to become more and more familiar with the aging of the population, and therefore, the tolerance to accept kidneys coming from sub-optimal donors has to increase. Friedersdorff et al. [4] have reported their

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experience reviewing 110 kidneys that were primarily rejected in their institution and then transplanted at other Eurotransplant centers. The cold ischemia time average was 16 h.

Thus, 31 % of recipients had creatinine levels under 1.47 mg/dl and 94 % had levels under 2.97 mg/dl at 3-year follow-up. They conclude that in-house acceptance criteria for organs from expanded criteria donors should be reviewed.

With the increase number of patients affected by ESRD and the shortage of organs for transplantation, living donation has become more popular in recent years. Data provided by the UNOS (www.unos.org) showed that in the USA, the number of living kidney donation equaled the number of deceased donors for the first time in 2000. In European countries, the numbers are not quite similar. For instance, in Spain, the number of living donations went from 2 % in 2000 to 15 % in 2012 (www.ont.es). However, with the data proving better graft survival in recipients from living donors when compared to those from the deceased donors, the future in this field is promising. Although DGF is less frequent than in the deceased donor population, those patients who present with slow graft function are at higher risk of graft rejection. Furthermore, the long-term graft survival rates have been shown to be significantly lower compared to those patients with immediate graft function. Hellegering et al. [5] showed that BMI, pre-transplant dialysis and warm ischemia time are associated with slow graft function on a multivariate analysis, and therefore, a meticulous selection of the donors and a short warm ischemia time should always be attempted. Following this direction, there have been multiple studies addressing the prevention of ischemia and posterior reperfusion injury in living donor nephrectomy. Results from several “in vitro” studies have suggested a certain benefit of diuretics for kidney protection. Specifically, mannitol has been matter of interest due to its presumed antioxidant activity, reduction in the alteration of

microcirculatory compliance and increase in the perfusion pressure. Despite the lack of evidence, a recent report by Cosentino et al. [6] has surveyed the use of diuretics in high volume centers. Result revealed the preference to use mannitol as a kidney protector; however, the timing of administration and dosage appeared to be operator dependant. Therefore, it is clear that a prospective randomized study is needed to unify the criteria for mannitol indication.

The final goal is to unify both selection and treatment criteria in order to increment the number of transplants and the pool of donors with the idea of reducing the ESRD population.

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