INVITED COMMENTARY

The true merits of liver allocation according to MELD scores: survival after transplantation tells only one side of the story

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In a recent edition of the journal, Weissmuller et al. [1] report on their analysis of outcome, risk factors and prognostic scores of 462 patients after liver transplantation in seven German centres. The perceived decrease in the results of liver transplantation in Germany since the introduction of the model for end-stage liver disease (MELD)-based allocation system in 2006 was the reason for this study. They report a 1-year patient survival after liver transplantation of 75.8%. Hyponatriaemia, re-transplantation and dialysis before transplantation were associated with increased mortality, but a MELD score above 30 was the strongest risk factor for 1-year post-transplant mortality. Recipients with a MELD score over 30 (21% of the entire study population) had a four times higher risk of dying within the first year of follow-up. The 1-year post-transplant survival rate for this subgroup was 52.6%. Despite the inferior results for high MELD scores, the authors do not recommend restricting liver transplantations to patients with MELD scores below 30. However, they make a plea for the development of robust predictive outcome parameters to prevent wasteful transplantations.

The MELD score was developed to predict poor survival of patients who receive transjugular intrahepatic portosystemic shunts [2]. It has been validated as a good predictor of mortality for diverse groups of patients with chronic liver disease, including candidates on the waiting list for liver transplantation. It was not validated for the prediction of death after transplantation [3]. With increasing demand for transplantation, waiting time became the major discriminating factor for organ allocation within the old allocation systems. Because of this, the MELD score was introduced as a superior disease severity scale for liver allocation. Since the introduction in 2002 in the USA, the system has been adapted several times to allow transplantation for those with metabolic and invalidating liver diseases and patients with hepatocellular cancer. It is now clear that further refinements of the system are needed to achieve improvement [4].

With the introduction of MELD score -based allocation in the USA and later in Europe, medical condition became the major discriminator instead of waiting time. This resulted in a switch from transplanting patients with the longest time on the waiting list to the sickest patients first, which was embraced by many of the people working in the clinical arena of liver transplantation. Since MELD was implemented as liver allocation tool, several reports have been published about the impact on survival after liver transplantation. So far it can be said that MELD is not able to predict post-transplant mortality and that the data are not conclusive [4–8]. This is further underlined

by the very wide regional variation in relation to the results obtained for high MELD patients. Worse results are observed within the eurotransplant (ET) area and in particular, as shown by Weismuller *et al.*, in Germany. The survival differences between ET and United Network for Organ Sharing (UNOS) range from 10% to 20% for MELD scores over 25 and 35, respectively. A higher Donor Risk Index in Eurotransplant as compared to UNOS can partly explain this difference (A. Rahmel, personal communication).

One observation is, however, universal: the duration of hospitalization, both in the intensive care and in the transplant ward, has become longer generating significantly higher health care-related costs, especially for the high MELD patients [8,9]. The impact on waiting list mortality or the number of patients removed from the waiting list had not been systematically analysed in these articles .

The article of Weismuller *et al.* contains important and emotionally charged information and supports the debate of whether we should question or even change the current liver allocation system. Considering the scarcity of donor organs we cannot afford to waste 50% of the organs in high MELD patients. Should we therefore shift from medical urgency to utility and transplant benefit? The concept of assigning priority in accordance with expected post-transplant outcomes was recently proposed by Schaubel *et al.* [10]. A survival benefit-based allocation system seeks to minimize mortality in the patient population as a whole by prioritizing patients based on their lifetime gain because of transplantation. This type of allocation system considers both waiting list and post-transplant outcomes. But this system can only work if we can predict mortality after transplantation in a more reliable way. In other words, can we identify which high MELD patients will benefit from a liver transplantation?

Keeping in mind the excellent results obtained for high MELD patients in several centres, the transplant community should also seriously question itself the value of the regional and national organization of liver transplantations. A more efficient organization could help healthcare authorities to provide more resources to those hospitals performing liver transplantation in very sick patients. Without a doubt, sicker patients need not only more care but also improved resources and medical availability.

Weismuller *et al.* are to be congratulated for their academic honesty as they present outcome data after liver transplantation that are worse than expected. However, 52.5% 1-year survival of patients with a MELD score over 30 tells only one side of the story. Lack of information on waiting list mortality and the number of patients removed from the waiting list because of deteriorating clinical condition impedes to determine whether the MELD-driven allocation process trades high mortality on the waiting list for high mortality after transplantation. One can hypothesize that the overall mortality, waiting list and post-transplantation mortality together, was not changed by introduction of MELD allocation. The true merits of an allocation system can only be determined when overall mortality, combining waiting list and post-transplant mortality, is reported. Information on overall mortality is also a prerequisite for proper benchmarking of transplant centres by patients and healthcare professionals. Future studies of the influence of MELD-driven allocation or any other allocation system should include information on overall mortality starting the moment the patient is listed.

References

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