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INVITED COMMENTARY

Can we match donors and recipients in a cost-effective way?*

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None.

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Organ shortage remains the major weakness of liver transplantation (LT). Nevertheless, efforts to increase the number of available organs have been successful; nowadays are currently transplanted several grafts discharged in the past. Definition and quantification of organ quality is an evolving field, and several algorithms have been proposed in order to predict organ function. Achieving success in LT is a more complex issue. Quality of the graft and degree of decompensation in the recipient are the strongest determinants of post-transplant outcome; however, perioperative management and logistic factors play important roles [1–6].

Costs of medicine have been growing up in the last 50 years due to innovations (strong and selective drugs, diagnostic tools, perioperative devices and procedures); however, only more recently, attention has been paid to the sustainability of the system. This is crucial in LT where the expenditures have been always increased from the pioneer's experiences.

Quality of the grafts and severity of disease in the recipients are theoretically predictive of higher costs and may potentially lead to the default. Although non-high-quality grafts [NHQGs, grafts from donors older than 49 y.o., or from Donation after Cardiac Death (DCD) or from national share] [7] in most cases present favourable outcome, they imply longer hospitalizations and extra costs [8]. On the other hand, 25% of patients with end-stage liver disease die before listing or awaiting LT, [9] often after expansive medical care.

Can we attempt to lower the costs transplanting all the referred grafts in the sickest patients and maintaining good results? NHQGs have been characterized by a slight reduction in survival figures in the medium term [1–6]. However, the small detrimental effect in the results (15–20% less) is counterbalanced by the large positive effect on the number of saved lives (up to 32% in the United States [9] and to 55% in some European countries such as Italy [5] or

Spain [6]). The question now is, 'how we can control this process?' We need to predict and stratify with accuracy the quality of grafts. Several scores have been developed [1–6], the best ones include donor and recipient factors as well as logistic parameters and report of events in the early postoperative period [10].

Donor Risk Index (DRI) – differently from scores developed to predict the outcome of the overall LT procedure (SOFA, BAR, D-MELD) [2–5], which are useful to avoid wrong donor–recipient matches – captures exclusively the risk related to the quality of the graft [1]. The strongest determinant of DRI is donor age, but cause of death, DCD source and share of the graft are also important. Recently, a modification of DRI (ET-DRI) has been proposed for the Eurotransplant area [11], but we believe that donor age *per se* remains the best predictive index in countries where DCD source is not used or the share of the graft is performed on a national basis [12]. Although DRI is not free of weaknesses (old database, lack of recipient parameters, absence of validation set) [12], there is sufficient literature on it to build a Markov model and investigate two match strategies (low-DRI grafts for any recipient achieving a long waiting list and any DRI graft for any recipient achieving a short waiting list). This has been well performed by Kensinger *et al.* [13]. The authors demonstrated that using both low- and high-DRI grafts implies less cost than using only low-DRI ones, although the coefficients of DRI have been obtained from the 1998–2002 UNOS database and the algorithms tailored for the American system. We should also point out that the Markov model has been developed by the authors using a too simple qualitative dichotomy (high-risk graft or standard graft) and that the risk factors of the recipients (age, aetiology, MELD, portal thrombosis, ICU, recurrence of disease) have not been included in the model. These limitations do not reduce the power of the study. By optimizing the match [2–6,12–15], we should refine it according to a cost-effectiveness approach, and therefore, data should be recorded prospectively in this scope.

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