Transpl Int (2004) 17: 651–652
DOI 10.1007/s00147-004-0772-x

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Aminopyrine breath test in cirrhotic patients awaiting liver transplantation: do we really need it?

Received: 20 April 2004
Accepted: 8 June 2004
Published online: 27 October 2004

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Dear Editors:

We read with interest the article by Degré and colleagues on the use of the aminopyrine breath test (ABT) to predict mortality among cirrhotic patients waitlisted for liver transplantation (LT) [1]. However, their well-designed study raises questions as to the real impact of such a test in the management of LT waiting lists. Patient stratification—which is often referred to as the sickest first principle—is crucial to any resource allocation, but prediction of post-transplant survival, i.e. utility, is mandatory if an LT programme is to be cost effective. The abysmal gap between organ demand and supply and the ever-increasing use of suboptimal donors mandate a policy of effective graft allocation, which is often opposite to the principle of equity.

Over the recent years several quantitative tests of liver function (QTLF) have been suggested to assess the hepatic functional reserve in patients with chronic liver disease [2]. These tests include the ABT, the methionine breath test, the galactose clearance capacity, the sorbitol and the indocyanine-green clearance [2, 3]. However, none has proved superior to the traditional Child–Pugh (CP) classification, which is based on clinical and laboratory parameters. Furthermore, QTLF may vary significantly within and across CP classes as a result of enzyme-inducing agents [4] and of causes of disease [5]. To date, it is unclear whether QTLF may provide relevant prognostic information in cirrhotic patients that is superior to that of conventional prognostic parameters or risk scores [2].

The recent introduction of the model for end-stage liver disease (MELD) scoring system for patient prioritisation is based on the assumption that graft allocation should favour the most urgent patients and that the CP-driven allocation system fails to identify seriously ill patients in a timely fashion [6]. However, even though the MELD system is a reliable indicator of patients' urgency within populations, there are differences in actual calculated risks for a given MELD score between populations [7]. Furthermore, the MELD score has been found to be poorly correlated with post-transplantation outcome, and surrogate prognostic models have been suggested [8].

The assumption that the pre-transplantation patient risk is paramount and that every patient has the same right to be offered LT is not the case in most European centres, where a National Health System run programme must comply with economic and ethic issues and face shortage of available resources. Moreover, the impact of marginal donor grafts on post-transplantation outcome is to be taken into account

when one is dealing with LT waiting lists, since international data clearly show that HCV recipients grafted with suboptimal organs fare worse than all the other categories of patients [9]. Therefore, a simple—and apparently more ethical—policy of patient prioritisation, based on pre-transplantation mortality but not taking into account the quality of grafts and the donor–recipient combination, would result in increased post-transplantation morbidity and misuse of available resources.

We are strongly convinced that a policy of utility or efficiency should be favoured if an LT programme is to be successful and cost effective. The analysis carried out by Degré and colleagues is valuable in that it shows the accuracy of the ABT in correlating with the liver functional reserve. Unfortunately, their conclusion that this test might improve the organ allocation policy is difficult to be agreed upon. It would have been more interesting and clinically relevant to assess the impact of the ABT in predicting post-transplantation outcome, with attention to patients that had received suboptimal grafts. What we need to know is how to identify patients who could benefit most from the use of marginal grafts, to single out the most favourable donor–recipient combinations and to improve cost effectiveness of LT programmes. The ABT does not aid in such analysis and diverts our attention from these challenging issues.

References

1. Degré D, Bourgeois N, Boon N, Le Moine O, Louis H, Donckier V, El Nakadi I, Closset J, Lingier P, Vereerstraeten P, Gelin M, Adler M. Aminopyrine breath test compared to the MELD and Child–Pugh score for predicting mortality among cirrhotic patients awaiting liver transplantation. Transpl Int 2004; 17: 31.
2. Herold C, Heinz R, Radspiel-Tröger M, Schneider HT, Schuppan D, Hahn EG. Quantitative testing of liver function in patients with cirrhosis due to hepatitis C to assess disease severity. Liver 2001; 21:26.
3. Di Campli C, Angelini G, Armuzzi A, Nardo B, Zocco MA, Candelli M, Santoliquido A, Cavallari A, Bernardi M, Gasbarrini A. Quantitative evaluation of liver function by the methionine and aminopyrine breath tests in the early stages of liver transplantation. Eur J Gastroenterol Hepatol 2003; 15:727.
4. Herold C, Ganslmayer M, Ocker M, Zopf S, Gailer B, Hahn EG, Schuppan D. Inducibility of microsomal liver function may differentiate cirrhotic patients with maintained compared with severely compromised liver reserve. J Gastroenterol Hepatol 2003; 18:445.
5. Herold C, Regn S, Ganslmayer M, Ocker M, Hahn EG, Schuppan D. Can quantitative tests of liver function discriminate between different etiologies of liver cirrhosis? Dig Dis Sci 2002; 47:2669.
6. Organ Procurement and Transplantation Network—HRSA: final rule with comment period. Fed Registr 1998; 63:16296
7. McCaughan GW, Strasser SI. To MELD or not to MELD? Hepatology 2001; 34:215.
8. Desai NM, Mange KC, Crawford MD, Abt PL, Frank AM, Markmann JW, Velidedeoglu E, Chapman W, Markmann JF. Predicting outcome after liver transplantation: utility of the model for end-stage liver disease and a newly derived discrimination function. Transplantation 2004; 77:99.
9. Neumann UP, Berg T, Bahra M, Puhl G, Guckelberger O, Langrehr JM, Neuhaus P. Long-term outcome of liver transplants for chronic hepatitis C: a 10-year follow-up. Transplantation 2004; 77:226.