Original Article

Analysis of patients listed for liver transplantation in Shiraz, Iran


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Aim: To analyze records of patients listed for liver transplantation (LT) at our hospital, the first and the largest LT center in Iran. Methods: We analyzed medical records of patients aged 14 years or older, who were listed for LT for chronic liver disease between 1994 and 2004. Outcome was determined from records or follow-up data. Results: Among the 480 patients (mean age 39 [SD 13] years; 327 [68.1%] men) listed for LT, common causes of cirrhosis were cryptogenic (143; 29.9%) and hepatitis B (127; 26.5%). Child-Turcott-Pugh (CTP) class distribution of these patients was: A – 37 (7.7%), B – 258 (53.7%), and C – 185 (38.6%). Mean (SD) follow-up duration was 11.4 (11.8) months (range 1-108). One hundred and four (21.7%) patients received LT and 173 (36%) died while awaiting LT. CTP class influenced 1-year (90%, 73% and 55% in class A, B and C, respectively) and 2-year (84%, 48% and 25%, respectively) survival rates. MELD score also influenced survival. Survival was better in patients who underwent LT than in those who continued on the waiting list (p<0.01). Conclusion: Only about one-fifth of patients listed for LT in Iran received LT, and a large proportion died without LT. [Indian J Gastroenterol 2006;25:11-13].

Methods

We retrospectively reviewed the case records of all patients aged 14 years or older and having chronic liver disease, who were listed on the LT waiting list in our center between 1994 and 2004. Criteria for listing included CTP score of 7 or more, documented gastrointestinal bleeding, hepatic encephalopathy, SBP, uncontrolled ascites or uncontrolled pruritus. Patients with hepatocellular carcinoma and acute liver failure were excluded. Baseline demographic, clinical and laboratory data were retrieved from our hospital records. Information on etiology and complications of liver disease was retrieved from the records of referring gastroenterologists. MELD scores at the time of listing were calculated from these data retrospectively. All patients were managed by the referring physician as usual, and were simultaneously followed up at the transplant clinic either through visits or by telephone till death, LT or end of study period (September 2004).

Statistical analysis

Data on continuous variables were analyzed using Student’s t test. For duration of follow up that was not distributed normally, the Mann-Whitney U test was done for comparison between different groups as appropriate. Actuarial survival rates, calculated using Kaplan-Meier method, were compared using the log-rank test. To determine independent prognostic factors for survival, Cox regression model analysis (backward stepwise method) was used. Analysis was done using SPSS for Windows software (SPSS, Chicago, IL, USA), and p values <0.05 were considered significant.

Results

Among the 480 patients included in the study (age 39 [13] years; 327 [68.1%] men), the most common causes of liver disease were cryptogenic cirrhosis (143; 29.8%) and hepatitis B virus infection (127; 26.5%). Other causes were autoimmune hepatitis (64; 13%), primary sclerosing cholangitis (PSC – 30; 6%),

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primary biliary cirrhosis (PBC – 34; 7%), hepatitis C (42; 8.8%), and other causes (39; 8.3%) including alcohol, Wilson’s disease and Budd-Chiari syndrome. Two hundred and seventy-eight (57.9%) patients had one or more complications; of these, gastrointestinal bleeding (n=99) was the commonest, followed by ascites (97), encephalopathy (34), SBP (34) and pruritus (17). Distribution of CTP classes in our patients was: A 37 (7.7%), B 258 (53.7%), and C 185 (38.6%). The mean duration of follow up of all patients entering the waiting list was 11.4 (11.8) months (range 1-108; median 8).

Of the 480 patients originally listed, 104 (22%) underwent LT, and 173 (36%) died awaiting LT. The mean time to LT was 7.7 (8.4) months; in contrast, those who did not receive LT continued on the list for a longer period (12.7 [12.3] months; p<0.001 by Mann-Whitney U test).

Patients who underwent LT had better survival than those who did not (p<0.01; log rank test). Survival rates also depended on CTP class (p<0.0001; Figure). The Table shows the relationship of survival to CTP class, etiology of liver disease and presence of various complications. Patients who died while waiting for LT had higher MELD scores than those who continued in the list (19 vs. 15; p<0.001).

In the Cox regression model analysis using age (categorized as less than or more than 40 years), gender, CTP score (categorized as A, B or C), MELD score and presence or absence of complications (variceal bleeding, hepatic encephalopathy, pruritus, uncontrolled ascites or SBP), only the MELD score was found to be an independent risk factor (p=0.001, 95% CI 1.021-1.082).

**Table: Duration of patient survival while waiting for liver transplant according to Child-Turcotte-Pugh (CTP) score, etiology of liver disease and presence of complications**

<table>
<thead>
<tr>
<th>Duration</th>
<th>Number (%) of patients surviving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient characteristics</td>
<td>3 mo</td>
</tr>
<tr>
<td>CTP score</td>
<td></td>
</tr>
<tr>
<td>A (n=37)</td>
<td>100</td>
</tr>
<tr>
<td>B (n=241)</td>
<td>98</td>
</tr>
<tr>
<td>C (n=166)</td>
<td>90</td>
</tr>
<tr>
<td>Etiology</td>
<td></td>
</tr>
<tr>
<td>Viral (n=149)</td>
<td>95</td>
</tr>
<tr>
<td>Non-viral (n=295)</td>
<td>96</td>
</tr>
<tr>
<td>History of complications</td>
<td></td>
</tr>
<tr>
<td>Negative (n=183)</td>
<td>98</td>
</tr>
<tr>
<td>Positive (n=261)</td>
<td>95</td>
</tr>
</tbody>
</table>

**Discussion**

Despite limited experience with LT, survival of patients undergoing LT in our institution was better than that of patients who continued on the waiting list, indicating the success of our LT program. However, only 22% of patients received LT. In other centers too, there is a wide discrepancy between the need for LT and the total number of procedures done. In a report from USA, between 1988 and 1997, the number of patients waiting for LT increased almost 16-fold, and the number of waiting-list deaths increased almost 6-fold.4

A large proportion (36%) of our patients listed for LT died without receiving a transplant. In a cohort study from Chile, of 52 chronic patients in the waiting list, 26 (50%) were transplanted within a mean time of 168 days, while 3 died awaiting LT.5 Review of the organ allocation system based on waiting time on the list, disease severity and expected remaining survival may help reduce the mortality rate during the wait for LT.5 We were unable to do this for our patients, since it needs a more elaborate data analysis.

CTP score has been widely used to stratify patients on LT waiting lists. However, it has some limitations, namely, subjective nature of its clinical components (ascites and encephalopathy) and variations in reference ranges for biochemical parameters (albumin, bilirubin, prothrombin time) between laboratories. In recent years, MELD score has been proposed as a more objective and accurate method for stratifying candidates for LT.3 In our patients too, MELD score correlated with survival; in addition, higher age and male gender were also associated with higher mortality.

In conclusion, our LT program has been
successful by improving survival of patients with end-stage chronic liver disease. However, only about one-fifth of patients listed for LT in Iran undergo this procedure, and several die while on the waiting list, with high MELD score, old age and male gender being predictive of such death.

References


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Book Review

Clinical Gastroenterology. Edited by Rajiv Mehta. Hyderabad: Paras Medical Publisher. 331 pages. Rs 395

This book, with contributions from more than 40 specialists, is aimed primarily at the postgraduate student in Gastroenterology. A minor point needs mention at the start: individual sections and chapters are not credited to individual contributors (although their inputs have been listed elsewhere), so it is difficult to apportion credit or blame!

The editor has divided the contents into sections describing symptomatology, physical examination, case discussions, and allied topics relating to nutrition, pharmacology, pathology, procedures and instruments.

The section on symptomatology is well covered by its author, but this is also well covered in standard textbooks. The section on physical examination is crisp and to the point. Techniques of examination are explained in easy language. However, a few more illustrations would have been helpful.

The section on case discussions is particularly impressive. The author has discussed most of the cases that are seen in day-to-day practice and the ones kept for postgraduate examinations. This section will be useful for students to fine-tune their approach to managing patients as well as to prepare for their examinations. However, a few points pertaining to the Indian scenario on each case would have been really useful.

Allied topics have also been covered fairly well. However the sections on radiology and histopathology needed to be more illustrative. The section on instruments is particularly noteworthy.

In summary, the editor has compiled an excellent book, with a comprehensive index included. It should be very useful for the Gastroenterology student preparing for the examination.

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