Can Variceal Band Ligation (VBL) Improve MELD Score for patients awaiting for liver transplantation?

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Background: Esophago-gastric varices are abnormal distended veins usually seen in the esophagus (esophageal varices) and less commonly in the stomach (gastric varices) or in other sites (ectopic varices), bleeding such varices prior to liver transplantation may increase the MELD associated – co-morbidities and even mortalities, hence Liver operation may cancelled in different situations, Nevertheless (VBL) should be optimized critically to improve overall success. Aim: Evaluated prophylactic (VBL) may have a beneficial role improving MELD score for those awaiting for Liver Transplantation.

Methods: prospectively 70 patients; 53 male and 17 female awaiting for liver transplantation aged (18 to 63) year- old (MELD score ranged between 16 to 38, presented with esophageal/ gastric varices with different grades, VBL was done as primary prophylaxis and comparative MELD score was calculated at the time of VBL and 2 weeks further on. Children was excluded from the study, additionally patients beyond Milan HCC criteria and those with contraindication for major surgery were excluded also.

Results: MELD score improved post VBL without reported complications, additionally VBL as a primary prophylaxis was a corner stone procedure saving those with large varices against bleeding may affect the overall operation prognosis, Mean, Median and SD before and after VBL was; (18.9,19.2, 6.02) and (16.9,15.9,6.5) respectively.

Conclusion: Cirrhotic patients presented with large esophageal varices (LEVs) prepared for liver transplantation should receive variceal band ligation (VBL) prior to surgery, should decrease associated co-morbidities. MELD score have been improved totally post (VBL), but statistically showed no significant importance.

Keywords: MELD, VBL, Liver transplant, Endoscopy.


I. Introduction

Many complications of portal hypertension related-advanced cirrhosis can be identified in patients awaiting for liver transplantation, include porto-systemic collaterals with the resulting variceal hemorrhage, ascites, hepato-renal syndrome type I and II, hepato-pulmonary syndrome and porto-systemic encephalopathy, that may affect the outcome success of such major transplant operation, nevertheless the most complex operation in the surgery [1-5]. Nevertheless, varices are present in almost all patients with cirrhosis on the waiting transplant list, they are the most feared and most lethal of cirrhosis related- complications. Therefore, all patients on the list should be screened for their risk of having or developing varices in order to attempt prophylaxis VBL. However many reported such Variceal Band Ligation (VBL) related- complications such as developing ascites post VBL, infection and re-bleeding, affecting MELD, that why some hepatologists worldwide prefer medical therapy instead of Variceal Band Ligation (VBL) [6-10]. Accordingly we hypothesized to know if VBL improves or does not improve MELD prior to liver Transplantation.

2. Patients and Methods

Prospectively we followed 70 patients on the waiting list for liver transplantation; 70 patients; 53 male and 17 female aged between 18 to 63 years old, in the period from January 2012 till January 2015, all have MELD > 14; (16 to 38), in
different centers across Egypt. MELD was evaluated according to Mayo Clinic internet website calculator according to the international equation; MELD = 3.7 [Log serum bilirubin (mg/dL)] + 11.2 [Log INR] + 9.6 [Log serum creatinine (mg/dL)] + 6.4 [11]. All patients reported in the study were Egyptians with criteria of End stage liver disease (ESLD) of post viral hepatitis (HCV or HBV), the most common indication for liver transplantation worldwide. Prophylaxis VBL was done for all of them, MELD was calculated before the Endoscopy and 2 weeks later on.

Patients presented with hematemesis, melena, encephalopathy, hepato-renal syndrome either Type I or Type II, extensive portal vein thrombosis and those with HCC were excluded from the study, because other co-morbidities may affect the MELD score significantly, additionally those beyond Milan criteria for liver transplantation were excluded from current study.

3. Statistical Analysis

All statistical analyses were performed using SPSS version 22 software for Microsoft Windows (Statistical Package for the Social Sciences; SPSS Inc., Chicago, IL). The descriptive data were summarized as frequencies, percentages and mean with standard deviations (SD). Chi-square test was applied for testing relationships on categorical variables. Difference were considered statistically significant when p-value <0.01. The models discriminatory ability was verified through the operational characteristic curve.

4. Results

The mean age for all patients included in the study was 54.6 years old, Table 1.

Calculation of MELD Score pre and Post VBL showed difference, however it was not statistically significant, Table 2, Figure; 1, 2.

However MELD improved in 43 patients; 61.9% and did not improve in 27 patients; 38.1%; Table 3, Figure 3.

There was no reported complications first 2 weeks post VBL.

Table (1) age and related statistics for patients included in the study.

<table>
<thead>
<tr>
<th>Mean</th>
<th>Median</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>54.60</td>
<td>55.00</td>
<td>5.123</td>
<td>18</td>
<td>63</td>
</tr>
</tbody>
</table>

Table (2) showing pre and post VBL MELD differences.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preband ligation MELD</td>
<td>18.888</td>
<td>19.200</td>
<td>6.0222</td>
<td>7.3</td>
<td>30.7</td>
</tr>
<tr>
<td>Postband ligation MELD</td>
<td>16.937</td>
<td>15.900</td>
<td>8.4212</td>
<td>6.5</td>
<td>37.7</td>
</tr>
</tbody>
</table>

P = 0.1

Figure (1) MELD Pre VBL.

Figure (2) MELD post VBL.
Our prospective study was done initially to evaluate if there is a relationship between VBL and MELD and to consider in another point of view such complications related- VBL may affect the time of transplant operation and overall operation success, we have not reported any complications related to VBL in 70 Egyptian patients on the waiting list for living donor liver transplantation (LDLT) two weeks later explained by good hands and professionals skills with very long experience who performed VBL. Additionally over all MELD improved but without statistical significant consideration; p=0,1, the situation we believed the safety of such effective procedure for all patients awaiting for liver transplantation, especially in areas or countries with a long waiting time.

However only 69.1% benefited from VBL; showed MELD score improvement, the overall eradication of EVs in all patients was a considerable benefit against variceal bleeding. The results of VBL in our patients awaiting for liver transplantation may reflect a more aggressive approach to banding and the fact that it was performed by gastroenterologists are highly experienced in such invasive procedure may initiate some reported complications, accordingly we encouraged the VBL procedure performed only by skilled physicians.

All our patients selected in such a study were confirmed having esophageal varices by 2D ultrasound, recently approved by Uptodate® and other medical journals, the fact that we can predict EVs prior to VBL [15-18]. All Patients were on a waiting list for donation allocation selection because in Egypt there is only living donor allocation Program, a situation may make the waiting transplant list in Egypt longer than such allocation programs of both living donor and cadaveric system.

In a conclusion we suggest performing VBL for all patients awaiting for liver transplantation especially when longer waiting time, should improve MELD and decrease associated EVs- bleeding mortalities and morbidities, provided professional Gastroenterologists or Hepatologists should perform such worthy VBL procedure. Additionally Albumin correction before VBL may prevent developing ascites post VBL (Not yet published data).

6. Limitation of the study
The study was performed in Egypt where the highest HCV incidence worldwide, hence all patients were HCV, HBV or
combined viral hepatitis, hence other studies may show different results according to different liver diseases.

References


