Journal of Nursing
Revista de Enfermagem
UFPE On Line
ISSN: 1981-8963

ORIGINAL ARTICLE

SUCCESS OF THE HEPATIC TRANSPLANT ACCORDING TO THE TIME IN LIST

SUCESSO DO TRANSPLANTE HEPÁTICO DE ACORDO COM O TEMPO EM LISTA

SUCESO DEL TRANSPLANTE HEPÁTICO DE ACUERDO CON EL TIEMPO EN LISTA

Valesca Paes de Albuquerque Vieira[1], Tatiana de Medeiros Colletti Cavalcante[2], Meirylane Gondim Leite[3], Solange Diccini[4]

ABSTRACT

Objective: To identify whether pre-transplant MELD waiting list and MELD value is related to the prognosis of patients in the postoperative period of liver transplantation. ***Method***: this is a cross-sectional and retrospective study, with a quantitative approach, carried out in 85 charts of patients attended at the tertiary public hospital with a high complexity reference in liver transplantation. ***Results***: there were 85 medical records analyzed, with 52 patients being transplanted. There were 32 death after transplantation, one pre-transplanted death, and 40 medical records with unreadable letters with erasures, not available in the sector. The mean MELD at the time of listing varied from 08 to 40, with a prevalence of 13 to 20. ***Conclusion***: the study enabled to understand the application of MELD in patients on the waiting list and that mortality was shown to be lower (1 %) in the patients on the list, regarding the post-transplantation percentage (38%), which is an efficient method to be used in waiting lists. ***Descriptors*:** Liver Transplantation; Nursing Assessment; Prognosis.

RESUMO

Objetivo*:** identificar se o tempo em lista de espera e valor do MELD pré-transplante têm relação com o prognóstico dos pacientes no período pós-operatório de transplante hepático. ***Método: estudo transversal e retrospectivo, com abordagem quantitativa, realizado em 85 prontuários de pacientes atendidos no hospital público terciário de alta complexidade, referência em transplante de fígado. ***Resultados***: foram analisados 85 prontuários, dos quais, 52 pacientes eram transplantados, que foram a óbito pós-transplante 32, óbito pré-transplante 1 e 40 prontuários com letras ilegíveis, com rasuras e não disponíveis no setor. A média do MELD no momento da listagem variou de oito a 40, com prevalência de 13 a 20. ***Conclusão*:** o estudo possibilitou o entendimento sobre a aplicação do MELD nos pacientes em lista de espera e que a mortalidade demonstrou-se mais baixa (1%) nestes. Quanto ao percentual pós-transplante(38%), este um eficiente método a ser utilizado em lista de espera. ***Descritores*:** Transplante Fígado; Avaliação em Enfermagem; Prognóstico.

RESUMEN

Objetivo*:** identificar si el tiempo en lista de espera y valor del MELD pre-trasplante tiene relación con el pronóstico de los pacientes en el período pos-operatorio de trasplante hepático. ***Método: estudio transversal y retrospectivo con enfoque cuantitativo, realizado en 85 registros de pacientes atendidos en el hospital público terciario de alta complejidad referencia en trasplante de hígado. ***Resultados***: analizados 85 registros, siendo trasplantados listados 52 pacientes, que fueron al óbito post-trasplante 32, óbito pre-trasplante 1 y 40 registros con letras ilegibles, con borrones, no disponible en el sector. La media del MELD en el momento de la lista varió de 08 a 40, con prevalencia de 13 a 20. ***Conclusión*:** el estudio posibilitó entendimiento sobre la aplicación del MELD en los pacientes en lista de espera y que la mortalidad demostró más baja (1%) en los pacientes en lista, cuanto al porcentaje post-transplante(38%),siendo este un eficiente método a ser utilizado en lista de espera. ***Descriptores***: Trasplante de Hígado; Evaluación; Pronóstico de Enfermería.

[1]Enfermeira, Aluna do Curso de Especialização em Enfermagem em Terapia Intensiva, Universidade de Fortaleza/UNIFOR. Fortaleza (CE), Brasil. E-mail: valescappp@yahoo.com.br; [2]Enfermeira, Docente da Universidade de Fortaleza e Coordenadora da Especialização em Terapia Intensiva/UNIFOR. Aluna do Curso de Doutorado em Enfermagem, Universidade Federal de São Paulo/UNIFESP. São Paulo (SP), Brasil. E-mail: tatianamcc@unifor.br; [3]Graduanda, Universidade de Fortaleza/INIFOR. Fortaleza (CE), Brasil. E-mail: meirygondiml@hotmail.com; [4] Enfermeira, Doutora em Ciências, Professora Associado, Escola Paulista de Enfermagem, Universidade Federal de São Paulo/UNIFESP. São Paulo (SP), Brasil. E-mail: solange.diccini@unifesp.br

INTRODUCTION

Liver transplantation is now a worldwide procedure for the treatment of large numbers of liver diseases. The improvement of the surgical technique, the emergence of new immune-suppressive drugs and effective methods of organ preservation and a better understanding of the immunological phenomena contributed significantly to the reduction of complication rates and the increase in the survival of transplanted patients.[1]

In this context, it is known that liver transplantation is considered one of the most complex surgeries today, since no other interferes in many functions of the body (cardiovascular, renal, metabolic, respiratory), and needing a good hospital infrastructure, highly trained in the procedure and in the follow-up of severely debilitated patients already immune-suppressed by the disease causing the transplant.[2]

The first liver transplant was performed in 1963, in the city of Denver, United States, by Starzl in a three-year-old child who died during the surgical procedure. In that same year, two other liver transplants were performed, but the survival of these patients was short. In 1968, Starzl repeated this type of surgery in the first patient who survived for a longer period and had metastases from pre-transplantation cancer.[3]

In Latin America, the first liver transplant was successfully performed at the Hospital das Clínicas of the Faculty of Medicine of the University of São Paulo in 1968 and only in 2002 in the state of Ceará at the HUWC. Since then, the technique has been developed, and the number of transplants increases each year. In Ceará 194 liver transplants were performed in 2013, according to the Health Department of Ceará, and it is the State most performed liver transplants this year.[4]

Brazil had the need to regulate the transplantation service to create a national coordination, defining clear, technically correct and socially acceptable criteria for donation, collection, and implantation of the organ donated. Thus, Law 9,434 was published on February 4, 1997, regarding the disposition of removal of organs, tissues, and parts of the human body for the purpose of transplantation, treatment and the concept of brain death as a legal criterion for finding death.[5]

In June 1997, with Decree Law 2688, the Ministry of Health created the National Transplantation System (SNT) and the Centers for Notification, Collection and Distribution of Organs (CNCDO), establishing the distribution of organs and fabric on waiting lists.[6]

A new policy for the allocation of hepatic grafts was adopted in Brazil from Administrative Order Number 2,600 of October 21, 2009, of the Ministry of Health. It approves the Technical Regulation of the National Transplantation System considering the need to update, perfect and standardize the functioning and the importance of establishing specific rules for operating authorization of the SNT managing bodies, health facilities and specialized teams of the Ministry of Health, regulating patient registration according to a classification of liver disease based on the MELD scale (Model For Terminal Liver Disease). As a result, the list will now be organized throughout Brazil, due to the patient´s seriousness, as a substitute for the registration order (model valid from 2009).[7]

The selection of the most severe patients is used in the clinical practice through the Meld scale model, calculated from laboratory tests that evaluate the total bilirubin dosage (yellow substance that is part of the bile and that measures the liver efficiency); Creatinine (a substance that reflects kidney function); INR- International Normalized Ratio - a measure of prothrombin activity, which measures liver function in the production of coagulation factors.[8]

The Meld scale was developed in the United States and is employed worldwide. The values considered for Meld vary from 6 to 40. The important thing of this method is to observe the chances of mortality of the patient on the list. In this way, those in a more serious condition, with a high risk of death, will occupy the first positions in the line for a transplant. The priority service to the most serious patients is to avoid mortality.[9]

In the case of two patients having the same Meld index, one is selected for the oldest transplant in the list. The system foresees the service to the state lists with organs offered in the own state. This means that a liver offered in São Paulo should be transplanted, as a priority, into a recipient enrolled in the waiting list also in São Paulo. Eventually, in situations of 'maximum urgency,' there will be the national search through the National Transplant Center, located in Brasília.[8]

The preoperative mortality rate in liver transplants currently occurs mostly because patients do not survive in time to have the organ available for surgery. The patient is classified in the MELD list who still have triggers that rearrange it for top priority, but everything is lost at the moment that there

are not enough organs to demand, raising the mortality rate at this preoperative stage. In the postoperative period, the causes of complications that may occur are intractable coagulopathy, rejection, and infection.[10]

Therefore, the desire to study this topic emerged from work experience in a referral hospital in liver transplantation in the State of Ceará, noting the need to study whether patients awaiting liver transplantation at a longer time had higher mortality than a patient who is waiting less time.

The information collected here contributes to the professionals directly related to the administrative organs and health secretariats, hospital coordination, the CIHDOTT and the health professionals in general, having data to evaluate the methodology used to prioritize the cases in a list.

The objective of this study was to identify whether the waiting list time and pre-transplant MELD value are related to the prognosis of the patients in the postoperative period of liver transplantation.

METHOD

This study is a cross-sectional and retrospective research with a quantitative approach performed in a tertiary public hospital with a high complexity reference in liver transplantation in the state of Fortaleza (CE), Brazil, from August to September 2014, after approval of the research project by Research Ethics Committee. The mentioned hospital has 513 beds, 08 beds are for Liver Transplantation and in its surgical center two rooms available for surgeries of liver transplants linked to the Secretary of Health of Ceará.

The sample of this research consisted of 85 records of patients listed and/or transplanted between 2010 and 2014. As inclusion criteria defined for the research, there were the medical records of patients who were on the list waiting for the transplant or who were transplanted in this service. There were 40 medical records excluded having illegible letters, erasures, with incomplete or not available data in the sector. The search for medical records occurred at the Customer Service Center (NAC), where data collection took place through a structured form that counted the following variables: demographic data, health history, and postoperative data.

The data were organized in the Microsoft Excel 2007 program, and the analysis was performed through descriptive statistics with a focus on absolute and relative frequency. The results were presented in graphs and tables and confronted with the pertinent literature on the subject.

This study is in compliance with Resolution 466/12 of the National Health Council (CNS), and the research project was submitted to the Research Ethics Committee of that hospital, approved under the protocol number 846.540/14.

RESULTS

This study had the sample of 85 records of patients seen in the hepatic transplant service in the period already described.

Table 1 shows the data regarding the gender and age of the patients assisted in this service.

Table *1*. Percentage distribution for the age group and gender of the patients seen in the Hepatic Transplant Sector. Fortaleza (CE), Brazil, 2014.

Age (years old)	n	%
15 to 20	06	7
21 to 30	05	6
31 to 40	11	13
41 to 50	24	28
51 to 60	22	26
61 to 70	17	20
Total	85	100%
Gender	N	%
Male	53	62
Female	32	38
Total	85	100%

According to the table 1, it can be observed that the age range of the patients was from 15 to 70 years old, with a prevalence of the age group from 41 to 50 years old in 24 (28%) patients. Regarding gender, the most prevalent were the male in 53 (62%) patients.

When we analyze the time elapsed between the first visit and the inclusion on the transplant list, we can observe that the time varied between 0 and six months.

Table 2 shows that most patients were evaluated before inclusion in a list of 2 to 6 months in 30 (35%) cases. Similarly, in 26

(30%) patients, the time between the first evaluation and the inclusion in the list was less than two months.

During the waiting list for transplantation, 10% of the patients in the preoperative presented some problem that culminated in hospitalization. The most frequent problems were hepatic encephalopathy, massive ascites, upper and lower digestive hemorrhage, hepatorenal syndrome, spontaneous bacterial peritonitis, heart failure, hepatic coma, portal vein thrombosis and coagulopathies.

Table 2. Percentage distribution between the evaluation time for transplantation between the first consultation and inclusion in the list. Fortaleza (CE), Brazil, 2014.

	N	%
0 to 2 months	26	**30**
2 to 6 months	30	**35**
6 to 9 months	14	**17**
More than 9 months	15	**18**
Total	**85**	**100%**

After inclusion in the list, most patients were transplanted within the first six months (Table 3).

Table 3- Percentage distribution of time elapsed between inclusion in the list and liver transplantation. Fortaleza (CE), Brazil, 2014.

	N	%
0 to 1 months	20	22
1to 6 months	31	35
6 to 12 months	13	14
12to 24 months	15	18
24 to 48 months	06	11
Total	85	100%

Regarding the initial MELD of the patients under study, it can be seen in Table 4 that most of the patients (42%) had a MELD value ranging from 13 to 20 at the time of inclusion in the list. It is noteworthy that a considerable number of patients (30%) had MELD of 21 to 30.

Table 4. Percentage distribution of the MELD value at the time of inclusion in the transplant list. Fortaleza (CE), Brazil, 2014.

	N	%
Under 12	12	14
13 to 20	36	42
21 to 30	25	30
31 to 39	5	6
40	7	8
Total	85	100%

Another relevant aspect was that all patients presented an increase in the value of MELD while awaiting transplantation, which reveals an increase in the severity of MELD.

The final outcome of the patients is described in Table 5. Most of them (52%) were transplanted and remained alive until the end of the data collection. However, there were 32 (38%) patients transplanted and died after transplantation. Only one patient died before the transplant.

Table 5. Percentage distribution of the final outcome among the sample of patients. Fortaleza (CE), Brazil, 2014.

	N	%
Pre-transplant death	01	1
Transplanted and alive	52	61
Death after transplantation	32	38
Total	85	100%

It was observed that the patients who died after transplantation had the highest MELD values at the time of transplantation. Of the 32 patients, 18 (56%) had MELD above 41, five (16%) had MELD between 31 and 40, three (9%) between 21 and 30, five (16%) between 13 and 20 and only one patient below 12. This data reflects the severity of the patient at the time of surgery.

Regarding the problems that led to hospitalization in the postoperative period, there are biliary steatosis, coagulation disorders, sepsis, gastrointestinal discomfort, hemochromatosis, clot in the Biliary Village, acute pulmonary edema, graft loss due to hepatic dysfunction, portal vein thrombosis, septic shock, hepatic heterogeneous collection, diarrhea, seizure, hernia, psychiatric disorder, hydroelectrolytic disorder, cholangitis and acute ischemia.

DISCUSSION

Transplant indications have increased greatly over the past 40 years as liver disease progresses with complications that hinder for patients to lead a normal life despite all the drug arsenal available on the market. It is one of the most performed surgeries in Brazil, and this occurs because of the inclusion criteria for performing a transplant.[11]

Some previous publications have demonstrated the efficiency of MELD-based algorithms for liver transplant allocation in the US and Europe.[12-3] As the number of transplants is increasing worldwide, it is important to identify whether the waiting list time and the MELD pre-transplantation is related to the prognosis of patients in the postoperative period of liver transplantation.

In our study, most of the patients were males and aged between 41 and 50 years old. Several studies have shown the same results regarding gender[8-10], but as for age, these same studies had more advanced age patients.[8-10]

A previous study had the validation of the efficiency of the MELD allocation system in Brazil as its main finding.[12] In this same study, it was observed that patients with MELD variation between 13 and 30 (72%) had a longer survival after transplantation. Thus, the use of more severe recipients associated with donors with expanded criteria could lead to lower survival and improve the allocation of available organs.[12-5] This fact coincides with our data, where the value of MELD in the immediate preoperative period was quite high from the original, showing the greater severity of the receptor, which may be related to the higher post-transplant mortality.

Regarding the success of liver transplantation according to the list time, we can infer that patients who remained for more than six months on the transplant list had more postoperative complications and more post-transplant problems. Patients who waited less than six months on the list had fewer complications. The main postoperative complications were portal vein thrombosis, hemorrhage and graft rejection, as previously mentioned.[15]

It is important to mention that the analysis identified as one of the main motivators of death reduction is the efficient evaluation and speed of inclusion in the list, the analyzed data show that the time of evaluation and inclusion in the list concentrates 35% of the patients in list in the time within 6 months after the first consultation. In an earlier study, in another center, the mean time elapsed between the patient´s diagnosis and the transplant was 19.3 ± 16 months.[15]

The main argument of the MELD system is the reduction of mortality on the waiting list. This was achieved for the entire population, when it was observed that the mortality on the list was 1.2% (pre-transplant) and 38% (post-transplant), indicating that the waiting time in the list in the analyzed data concentrated 75% of the patients being transplanted in the first year.

In summary, there is a very low degree of mortality on the pre-transplant waiting list. A previous study shows that the patients listed in the post-MELD period had a significant reduction in the risk of death on the waiting list and that there were no changes in the results after transplantation.[11] This research confirms that the MELD system must be used successfully for the liver transplantation in developing countries, but there is an important relationship in the success of transplantation and reduction of post-transplant mortality when there are a rapid evaluation and classification in a list parallel to a shorter waiting time in the list, since this does not an increase in the degree of severity of the patient over time without the surgical intervention to which he is applying.[11]

CONCLUSION

The study allowed the understanding of the application of MELD in patients on the waiting list and mortality was shown to be lower (1%) in the patients in the list, regarding the percentage post-transplantation (38%), is an efficient method to be used on the waiting list. Despite this, about 18 (56%) patients who

had a MELD of 40 at the time of transplantation died in the postoperative, inferring that the greater the patient's severity at the time of transplantation, the higher the postoperative mortality.

It was clear from the research that time (from assessment to inclusion in the list) is a crucial factor in successful liver transplant allocation. In the end, we observed that the lack of organ donors has a strong impact on mortality due to the longer list time to which the patient is submitted due to organ shortage, which makes his clinical condition deteriorate with the passage of time.

REFERENCES

1. Castro AF, Castro LP, Leite VHR, Junior EP, Lima AS, Gazzola L, et al. Achados histológicos em 48 pacientes transplantados do fígado: biópsias do enxerto pós-reperfusão (tempo zero) e de três a 15 dias pós-transplante. J Bras Patol Med [Internet]. 2002 [cited 2014 June 22]; 38(4):10. Available from: http://www.scielo.br/pdf/jbpml/v38n4/a09v38n4.pdf

2. Mies S. Transplante de fígado. Rev Assoc Med Bras [Internet]. 1998 [cited 2014 June 22];44(2):127-34. Available from: http://www.scielo.br/pdf/ramb/v44n2/1992.pdf

3. Jorge SG. Cirrose hepática [Internet]. 2011 [cited 2014 June 22]. Available from: http://www.hepcentro.com.br/cirrose.htm

4. Garcia JHP. Implantação do transplante ortotópico de fígado humano no estado do Ceará [tese].Fortaleza: Universidade Federal do Ceará; 2002.

5. Brasil. Lei nº 9434 de 4 de fevereiro de 1997. Dispõe da remoção de órgãos e tecidos e partes do corpo para fins de transplante e tratamento [Internet]. 1997 [cited 2014 June 30]. Avaliable from: http://www.planalto.gov.br/ccivil_03/leis/L9434.htm

6. Brasil. Decreto nº 2.268 de 30 de junho de 1997. Regulamenta a Lei 9.434 e cria o Sistema nacional de Transplantes e as centrais de Notificação, Captação e Distribuição de Órgãos [Internet]. 1997 [cited 2014 June 30]. Available from: http://www2.camara.leg.br/legin/fed/decret/1997/decreto-2268-30-junho-1997-341459-norma-pe.html

7. Brasil. Portaria nº 2.600, de 21 de outubro de 2009. Aprova o Regulamento Técnico do Sistema Nacional de Transplantes [Internet]. 2010 [cited 2014 June 30]. Available from: http://bvsms.saude.gov.br/bvs/saudelegis/gm/2009/prt2600_21_10_2009.html

8. Boin IFSF, Leonardi MI, Udo EY, Sevá-Pereira T, Stucchi RSB, Leonardi LS. Aplicação do escore meld em pacientes submetidos a transplante de fígado: Análise retrospectiva da sobrevida e dos fatores preditivos a curto e longo prazo. Arq Gastroenterol [Internet]. 2008 [cited 2014 June 30];45(4):275-283. Available from: http://www.scielo.br/pdf/ag/v45n4/04.pdf

9. Salvalaggio P, Afonso RC, Pereira LA, Neto BHF. O sistema MELD e a mortalidade em lista de espera para transplante de fígado em países em desenvolvimento: lições aprendidas em São Paulo. Rev Einstein [Internet]. 2012 [cited 2014 June 30];10(3):278-85. Available from: http://www.scielo.br/pdf/eins/v10n3/v10n3a04.pdf

10. David AI, Coelho MPV, Paes AT, Leite AK, Guardia BD, Almeida MD, et al. Comparação da evolução do transplante hepático em receptores com MELD alto e baixo. Rev Einstein [Internet]. 2012 [cited 2014 June 30];10(1):57-61. Available from: http://www.scielo.br/pdf/eins/v10n1/pt_v10n1a12.pdf

11. Aguiar MIF, Braga VAB. Sentimentos e expectativas de pacientes candidatos ao transplante de fígado. Rev Eletr Enferm [Internet]. 2011 [cited 2014 July 10];13(3):413-21. Available from: https://www.fen.ufg.br/fen_revista/v13/n3/pdf/v13n3a06.pdf

12. Freeman RB Jr, Wiesner RH, Roberts JP, McDiarmid S, Dykstra DM, Merion RM. Improving liver allocation: MELD and PELD. Am J Transplant. 2004; 4(9):114-31.

13. Dutkowski P, Oberkofler CE, Béchir M, Müllhaupt B, Geier A, Raptis DA, et al. The model for end-stage liver disease allocation system for livertransplantation saves lives, but increases morbidity and cost: a prospectiveoutcomeanalysis. LiverTranspl. 2011;17(6): 674-84.

14. Freitas ACT, Parolin MB, Stadnik L, Coelho JCU. Carcinoma hepatocelular: impacto do tempo em lista e das formas de tratamento pré-operatório na sobrevida do transplante de fígado cadavérico na era pré-MELD em um centro no Brasil. Arq gastroenterol [Internet]. 2007 [cited 2014 July 12];44(3):189-194. Available from:

http://www.scielo.br/pdf/ag/v44n3/a02v44n3.pdf.

15. Fukamizu EA, Martins DAR, Morais MW. Complicações no pós-operatório imediato de transplante hepático. Rev SOBECC 2010;15(3):17-24.

Submission: 2016/07/13
Accepted: 2017/06/15
Publishing: 2017/07/01

Corresponding Address

Valesca Paes de Albuquerque Vieira
Rua Tabelião Joaquim Coelho, 815
Bairro Sapiranga
CEP: 60833-261– Fortaleza(CE), Brazil