

Coping strategies and quality of life among liver transplantation candidates

Rosa Jurado^{1,2}, Isabel Morales¹, Diana Taboada¹, Francisca Denia¹, José Carlos Mingote¹,
Miguel Ángel Jiménez^{1,2}, Tomás Palomo^{1,2} and Gabriel Rubio^{1,2}

¹ Hospital Universitario 12 de Octubre and ² Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM, Madrid)

The maintenance of self-reported quality of life (QL) among people on the liver transplantation waiting list is one of the priority objectives of transplantation teams. Although there are different determinant factors of QL, results are not conclusive. In our study, the goal was to evaluate both the influence of cirrhosis etiology (ethylic and non-ethylic) and the coping strategies used concerning QL. A sample of 93 patients was selected, divided into two groups: ethylic cirrhosis (EC) and non-ethylic cirrhosis (NEC). QL was evaluated through the SF-36 Health Survey, and coping strategies through the Medical Coping Modes Questionnaire (MCMQ). Our results indicated that subjects with EC obtained similar QL levels to subjects with NEC, on all the SF-36 and MCMQ subscales. Furthermore, negative correlations were found between avoidance and acceptance-resignation coping strategies with the SF-36 components. Consequently, the acceptance-resignation strategy was associated with a worse perception of physical functioning, general and mental health, and vitality and role-emotional. Overall, these results suggest that cirrhosis etiology is not a determinant factor of QL, whereas the acceptance-resignation coping strategy might lead to lower self-perception of QL.

Estrategias de afrontamiento y calidad de vida en candidatos para trasplante de hígado. El mantenimiento de la calidad de vida (CV) autopercebida en las personas en lista de espera para trasplante hepático es uno de los objetivos prioritarios de los equipos de trasplante. Aunque existen diferentes factores que determinan la CV, los resultados no son concluyentes. Nuestro objetivo fue evaluar la influencia de la etiología (cirrosis etílica y no-etílica) y las estrategias de afrontamiento empleadas sobre la CV. Seleccionamos una muestra de 93 pacientes, dividida en dos grupos: cirrosis etílica (CE) y cirrosis no-etílica (CNE). La CV se evaluó mediante la Escala de Salud SF-36 y las estrategias de afrontamiento con el Cuestionario Médico de Estrategias de Afrontamiento (MCMQ). Nuestros resultados indicaron que los sujetos con CE obtenían niveles de CV similares a los sujetos con CNE, en todas las escalas del SF-36 y MCMQ. Además, se encontraron correlaciones negativas entre las estrategias de afrontamiento de evitación y aceptación-resignación, con los componentes del SF-36. Así, aceptación-resignación se asociaba con una peor percepción del funcionamiento físico, salud general y mental, vitalidad y rol-emocional. Estos resultados sugieren que la etiología de la cirrosis no es determinante de la CV, mientras que la aceptación-resignación como estrategia de afrontamiento conllevaría una autopercepción de la CV más baja.

After the «Consensus Conference of the National Institutes of Health» («Liver transplantation. National Institutes of Health Consensus Development», 1983), liver transplantation constitutes one strategy widely used for the treatment of chronic hepatic pathology. During 2008, 1108 transplantations were made in Spain (Garrido-Cantarero & Matesanz-Acedos, 2007), that is to say, 24.0 by million of inhabitants («Organización Nacional de Trasplantes», 2009).

The waiting period until the transplantation takes place is a highly stressful situation that usually leads to both psychological

and physical repercussions, as well as to negative effects on the self-reported quality of life (QL) (Bravata, Olkin, Barnato, Keeffe, & Owens, 1999; Gutteling, de Man, Busschbach, & Darlington, 2007a; Keown, 2001). A top in the priorities during this period is the detection of psychological distress symptoms, to avoid the beginning of psychological disorders and to maintain the best QL possible (Collins & Labott, 2007; Georgiou et al., 2003; Nancy, Colin, & Paul, 2008). Some of the several factors that could influence on the QL of these patients are personality, the illness-related coping strategies used and the etiology of liver disease (Estraviz et al., 2007a; Minazzato et al., 2009; Nickel, Wunsch, Egle, Lohse, & Otto, 2002).

The studies about the influence of cirrhosis etiology on the QL among candidates for liver transplantation are contradictory (Tomé, Wells, Said, & Lucey, 2008). Some of them find that alcoholics have similar QL to other patients (Sumskiene, Sumskas, Petrauskas, &

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Correspondencia: Rosa Jurado Barba
Servicio de Psiquiatría

Hospital Universitario 12 de Octubre
28041 Madrid (Spain)

e-mail: rosa.jurado@gmail.com

Kupcinskas, 2006). Glendhill et al., through the Nottingham Health Profile, reported that they only showed more noticeable detriment in the dimension regarding physical mobility (Gledhill & Burroughs, 1999). Other studies are coincident with alcoholics showing better QL before and after transplantation than cirrhotic patients by hepatitis C (Burra et al., 2005). On the contrary, other authors like Aadah, find worst punctuations in physical functioning and emotional role after transplantation (Aadahl, Hansen, Kirkegaard, & Groenvold, 2002; Bownik & Saab, 2009; Estraviz et al., 2007b; Minazzato et al., 2009), while Minazzato obtained among patients with alcohol-related disease that the «psychological function» subscale was found to be more impaired, whereas «sleep, diet, and free time» was less impaired compared with subjects with HCV-related cirrhosis (Minazzato et al., 2009).

After a bibliographical review, Tomé et al. maintain that regardless the origin of the cirrhosis, QL improves after transplantation without reaching the levels of healthy population. They justify the discrepancies found between the different studies by summarizing the limitations that some of them show, such as the use of non standardized questionnaires, the few longitudinal studies that can probe how the QL evolves, or the use of possibly slanted samples like those patients in worse medical situation, which afterwards are exitus and consequently excluded from the analysis (Tomé et al., 2008).

Coping strategies are a very important factor on the QL, slightly studied in chronic liver disease (Gutteling, de Man, Busschbach, & Darlington, 2007b; Telles-Correia, Barbosa, Mega, & Monteiro, 2009). Among patients with chronic hepatitis C (Kraus, Schafer, Csef, Scheurle, & Faller, 2000) or non-alcoholic cirrhosis (Zhang et al., 2005) an active coping style prevails, with strategies like problem resolution. On the contrary, depressive reactions as coping strategy, along with anxiety symptomatology and depression, as well as with stressful social environment, they contribute considerably to the presence of poor self-informed QL (Nickel et al., 2002; Telles-Correia et al., 2009).

Due to the controversy about this issue, our group planned to make a study on patients that are eligible candidates for liver transplantation. Those eligible candidates should be included on the waiting list (WL) for liver transplantation from our hospital and be abstinent from alcohol consumption for more than six months. The first objective of our study was to prove the influence of ethylic cirrhosis on both the coping strategies used by our patients and their self-reported QL. The variables assessed were QL and coping strategies. Our second aim was to determine the relationship between coping strategies and QL one month after being included on the WL.

Therefore, the subjects were classified according to the etiology of their liver pathology into two groups: ethylic cirrhosis (EC) and non-ethylic cirrhosis (NEC). Despite the fact that the results of previous studies have not been conclusive, we hypothesized that alcoholic patients would show avoidance coping strategies, which would lead to worse QL.

Method

Participants

One hundred and ninety six subjects over 18 years old were included as candidates for liver transplantation of the Digestive Surgery Service of our hospital, from September 2006 until July 2008. All the patients who were included on the WL and who

lived in Madrid were accepted for the study. Consequently, as 5 patients were living in other regions of Spain, the initial sample was composed of 191 patients. Nevertheless, 31 patients from this initial sample died before being assessed, as well as 31 patients received transplantation before being on the WL for a month, so they were excluded because a minimum of one month on the WL was considered to be necessary for a patient to be informed about transplantation with a minimal adaptation. In order to control the possible influence of medical pathology, Meld stage was included as co-variable. Moreover, 3 more subjects were excluded for being candidates for a second transplantation, 3 patients for multivisceral transplantation, 2 more subjects for having brain damage history and 12 patients for being excluded from the WL due to either their liver disease worsening or improvement. In addition, those patients with several difficulties to fill in the self-administered questionnaires were excluded (3 subjects). Besides, 13 patients refused to take part in the study.

Finally, we obtained a total sample of 93 patients that were included in our study. They were divided into two groups, according to the etiology of their cirrhosis: the first group was composed of patients with ethylic liver cirrhosis (EC, n= 47), and the second one of patients whose liver pathology had non alcoholic etiology (NEC, n= 46).

The study was accepted by the ethics commission of the «12 de Octubre» Hospital. All subjects included signed the inform consent before beginning the study.

Instruments

Firstly, all patients were assessed by a senior psychiatrist, who examined the presence of any impairment or psychiatric symptomatology by the Structured Clinical Interview for DSM-IV (SCID) (First, Spitzer, Gibbon, & Williams, 1995).

Clinical Variables: the following variables were obtained through the data provided by the Digestive Surgery Service: date of inclusion in the WL; MELD (Model for end-stage liver disease) stage, which assess the severity of chronic liver disease in terms of the values obtained for serum bilirubin, serum creatinine, and the international normalized ratio for prothrombin time (INR); etiology of hepatopathy and previous history of Hepatic Encephalopathy (HE).

Quality of life: SF-36 Health Survey on its Spanish version (Alonso, Prieto, & Antó, 1995; Ware, 1994). We decided to use this SF-36 version as it is widely used in medical research and clinical practice within Spanish population, showing both high reliability and validity (Vilagut et al., 2005). For instance, Cronbach alpha, which is used to assess reliability, obtains values higher than 0.70 for all the subscales (Alonso et al., 1998). In addition, SF-36 scales have been shown to achieve about 80-90% of their empirical validity in studies involving physical and mental health criteria (McHorney, Ware, & Raczek, 1993). It is designed to assess the QL level related to health. It consists of 36 items in 8 scales: Physical Function, Physical Role, Body Pain, General Health, Vitality, Social Behavior, Emotional Role and Mental Health. The punctuation follows a scale from 0 to 100. There is no breaking point, interpreting that greater punctuation involves better QL.

Medical Coping Modes Questionnaire (MCMQ) (Feifel, Strack, & Nagy, 1987) is a 19-item questionnaire designed to assess three illness-related coping strategies: Confrontation, Avoidance and Acceptance-Resignation. Items are answered on a four-point continuum ranging from 1 (never) to 4 (very often).

MCMQ attempts to assess both the psychological and behavioral functioning people show in response to their disease. Regarding the psychometric properties of the MCMQ, Feifel et al., (Feifel et al., 1987) and others (Ashby & Lenhart, 1994; Lenhart & Ashby, 1996) reported moderate to high alpha coefficients (0.56-0.74). The results of the varimax rotated component analysis, ranged from 0.559 to 0.803 (Rodrigue, Jackson, & Perri, 2000), which suggests an acceptable value for validity.

Procedure

It was proposed an observational design of series of patients on the WL for liver transplantation with two assessment points: the first one a month after their inclusion on the WL, and the second one six months after the first assessment. In this article, the preliminary data obtained one month after being included on the WL are presented, in order to describe the psychological profile of these patients before being transplanted, as well as to establish the differences between the two groups in terms of the etiology. Future studies from our group will focus on the functioning of both groups of patients after liver transplantation, but an initial measure before the transplantation is necessary to assess the real effects from the liver transplantation on the psychological functioning.

Data analysis

The qualitative variables (previous history of HE) were compared using the Chi Square test. Student’s t-Test was used to check the existence of any differences between both groups within the coping strategies used. Furthermore, analysis of covariance (ANCOVA) was used to assess the differences in QL among patients with EC and NEC. ANCOVA allowed controlling the possible influence of the association between the presence of alcoholism, HE and sex, which were included on the model as factors. The covariables were both coping strategies and Meld Score. Therefore, a clear measure

of the differences between the group of alcoholic and non-alcoholic patients was obtained. Subsequently, scores from the whole sample were correlated within both QL and coping strategies, by Pearson’s correlation. SPSS v15 statistic package was used for the data analysis (SPSS Inc, 2006).

Results

The percentage for men (76.3%; n= 71) was markedly greater than that for women (23.7%; n= 22). The average age was 53.92 years old (SD 09.1). As it can be seen on table 1, the only significant difference between both groups was that EC had more records of HE than the other group (IC 1, 4259-7.6374, at 95%). 1.5 percent of the total sample showed depressive symptomatology without depression diagnosis; consequently, this was not considered to be a cause of exclusion.

Table 1
Sample description

		Ethylic cirrhosis N= 47	Non-ethylic cirrhosis N= 46	p
Presence of HE	HE	32	19	0.009
	No HE	15	27	
Educational level	Literates and primary	18	18	0.648
	Secondary and FP 1	12	8	
	High school and FP 2	8	12	
	Graduate	9	8	
		Ethylic cirrhosis: Mean (SD)	Non-ethylic cirrhosis: Mean (SD)	p
Meld score		15.10 (4.09)	14.15 (4.43)	0.268

Table 2
Mean values and t test of quality of life and coping strategies

	EC		NEC		t	p
	Mean	Standard deviation	Mean	Standard deviation		
SF-36 Health survey						
- SF-36 total	99.9250	9.70696	101.8750	11.49401	-0.820	0.415
- Physical functioning	59.1250	27.21914	61.5000	28.44698	-0.382	0.704
- Role-physical	9.5313	10.96208	10.4688	11.17922	-0.379	0.706
- Bodily pain	61.3000	32.16400	60.2250	30.85906	0.153	0.879
- General pain	39.7500	21.25396	38.6000	19.38781	0.253	0.801
- Vitality	48.7714	27.88424	46.9271	24.12550	0.315	0.754
- Social functioning	63.4375	35.05804	70.6250	31.33642	-0.967	0.337
- Role-emotional	19.3750	9.12627	19.3750	9.87592	0.000	1.000
- Mental health	64.3167	26.48911	67.1917	20.43406	-0.544	0.588
Medical coping modes questionnaire						
- Confrontation	20.0526	3.81991	20.4595	3.51658	-0.480	0.633
- Avoidance	14.5263	4.13774	13.8649	3.31798	0.763	0.448
- Acceptance-resignation	6.7368	2.02263	6.9189	1.80090	-0.411	0.682

As it can be seen on table 2, EC subjects obtained similar punctuations in QL than the subjects with NEC, in all the subscales of SF-36 and on the coping strategies used (MCMQ). It was also found that after controlling the coping strategies, subjects with EC and NEC did not differ on the QL averages.

In the correlation between coping strategies and QL, an association between avoidance and acceptance-resignation coping strategies with some of the components of SF-36 was found among the total sample, as it can be seen on table 3. The perception of physical functioning showed a linear relation with avoidance ($F=4.050$; $p=0.050$; η^2 partial=0.086), as well as with acceptance-resignation. Besides, acceptance-resignation presented a linear relation with vitality ($F=6.365$; $p=0.015$; η^2 partial=0.129), role-emotional ($F=6.758$; $p=0.013$; η^2 partial=0.136) and mental health ($F=5.467$; $p=0.024$; η^2 partial=0.113). Consequently, it means that there exists negative correlation between the acceptance-resignation strategy and the physical functioning, general health, vitality, role-emotional and mental health.

Table 3
Pearson correlation of quality of life and coping strategies

	Confrontation	Avoidance	Acceptance-resignation
Physical functioning	-0.083	0.156	-0.262*
Role-Physical	0.107	0.115	-0.147
Bodily pain	0.029	0.093	-0.123
General health	-0.026	0.009	-0.352**
Vitality	-0.014	0.137	-0.309**
Social functioning	0.010	0.005	-0.142
Role-emotional	0.093	0.073	-0.294*
Social functioning	0.007	-0.104	-0.337**

** Correlation significant to 0.01 levels (bilateral)
* Correlation significant to 0.05 levels (bilateral)

Discussion

The most relevant findings of our preliminary study pointed that among patients on the WL for liver transplantation, presenting either alcoholic or non-alcoholic etiology there was no difference regarding QL or the coping strategies that were used. Out of the total sample, it was observed that negative correlation was found between the use of non-active strategies (acceptance-resignation) and QL.

Our findings about QL match to most of the studies on the field that compare different types of non-alcoholic cirrhosis (Cowling et al., 2000; Gledhill & Burroughs, 1999; Pereira et al., 2000; Sumskiene et al., 2006; Tomé et al., 2008). In a general way, bibliography points out that all patients on the WL showed worse QL than healthy subjects or another chronic disease, such as chronic obstructive pulmonary disease or heart failure (Sainz-Barriga et al., 2005; Younossi et al., 2000). This information suggests that QL might be associated with the detriment of the hepatic functioning more than with its etiology (Wiesinger et al., 2001). However, some authors have found different results (Aadahl et al., 2002; Burra et al., 2005; Minazzato et al., 2009). On this issue, Burra et al., informed that subjects with EC showed better QL before

and after transplantation than subjects suffering from cirrhosis by hepatitis C virus (HCV). His study shows that the worst QL was associated with the maintenance of the infection by C virus after transplantation (Burra et al., 2005). The small sample that Burra et al. used for their analysis, with a low number of patients ($n=25$), could be the possible explanation for these discrepancies. On the contrary, Estravitz et al., used a different way of gathering patients and they found that those patients with EC and with HCV obtained lower scores in every dimension of the SF-36 (with the exception of bodily pain) than patients with hepatocellular carcinoma or with primary biliary cirrhosis (Estravitz et al., 2007a). On the other hand, Aadahl et al. suggested that alcoholic subjects show worst QL than non-alcoholics subjects (Aadahl et al., 2002). This result, contradicting the one obtained by our group, may be due to factors like the way of gathering patients for their etiology. Aadahl classified patients into three groups: subjects with alcoholic and crypto-genetic cirrhosis; primary biliary cirrhosis, primary sclerosing cholangitis, HCV or HBV; and other diagnosis like acute hepatic failure, cancer or other non-primary cirrhosis. The heterogeneous groups and the sample size may have influenced their results. Because of that, our study tried to avoid heterogeneity by excluding patients showing acute hepatopathy or those who had been less than a month on the WL.

Regarding coping strategies, our findings showed that patients with EC did not have different coping strategies compared to NEC group, while they were on the WL. This fact suggests that coping strategies before transplantation are not dependable on the fact of the subject being alcoholic, rather other personality factors, probably prior to the onset of alcoholism (Telles-Correia et al., 2009). In our environment, early beginning of alcohol consumption with rare prevalence of personality disorders is characteristic of the profile of an alcoholic patient candidate for liver transplantation. This type of subject presents small differences with general population (Monras, Marcos, & Rimola, 2004), which might justify the absence of significant differences regarding the NEC group. On the other hand, perception of transplantation as a severe threatening factor can generate different strategies to those that lead the subject to alcohol addiction. The type of stressor has been considered to determine the coping response that is displayed (Holahan & Moos, 1987). In our environment, alcohol is usually a substance mostly used by individuals to facilitate socialization process. This stressor is quite different to facing a threat like transplantation, which implies an immediate life risk.

According to Lazarus, coping strategies might be considered being a process, in the way that they change in time according to the demands of the situation (Forsberg, Backman, & Svensson, 2002; Lazarus, 1993). The inclusion on the WL involves a highly stressing event, where it is necessary to adjust strategies in order to manage the internal demands increase (thoughts, lack of control perception, emotional changes, etc.). This change might be produced in alcoholic patients, which not only stay abstinent, but also adopt similar coping strategies to the rest of the patients (Chung, Langenbucher, Labouvie, Pandina, & Moos, 2001). Furthermore, according to Folkman and Lazarus (Lazarus, 1993; Pérez-San Gregorio, Martín-Rodríguez, Asián-Chavez, Gallego-Corpa, & Pérez-Bernal, 2005), outstanding of one specific coping style will depend on the beginning of the stressful situation experienced. Thus, confrontation style will be more used when the situation is regarded as changeable, while affective-oriented coping strategies, such as avoidance or acceptance-resignation will appear

more frequently when situations are perceived as unchangeable. Following this evidence, alcoholic cirrhotic patients could regard their situation as more changeable than non-alcoholic cirrhotic patients, due to the different illness length experienced by these two different groups of cirrhotic patients. Besides, patients with EC have been normally suffering from their disease for a short period of time, in comparison to HCV or HBV cirrhotic patients who have suffered from it for a longer period.

In relation to the association between acceptance-resignation strategies and worse QL, this study conclusions match to some other ones published using the same population. Zhang et al. made a study within non-alcoholic cirrhotic patients, who were evaluated after the transplantation using the «General Quality of Life Inventory» (GQOLI-74) and the MCMQ (Zhang et al., 2005). Their results showed a negative correlation between QL and acceptance-resignation, and a positive correlation between QL and both confrontation and avoidance strategies. In another study by Rodrigue et al., relevant negative correlations were found between acceptance-resignation coping strategy (MCMQ) and several scales from SF-36 (Rodrigue, Kanasky Jr, Jackson, & Perri, 2000), as well as positive correlations with BDI and STAI (Pérez-San Gregorio et al., 2005). Our results just informed about negative correlation between QL and acceptance/resignation. This difference might be mainly due to the selection of samples made by this author, which excluded those patients whose etiology was alcoholic and included patients with fulminant hepatitis. Besides, Rodrigue et al., examined the psychometric properties of the MCMQ among patients waiting for different kinds of transplants and they found that although both avoidance and acceptance-resignation scales were confirmed, confrontation scale was divided into social support seeking and information seeking (Rodrigue, Jackson et al., 2000). Our data support the relationship between maladaptive coping strategies (acceptance-resignation) and poor QL. According to what Rodrigue

suggests following Robinson in 1997, both the improvement and the lack of differences on the self-reported QL within a situation when the stress level is so increased, they can be due to a decrease in the maladaptive strategies, instead of an increase of the adaptive strategies (Rodrigue, Jackson et al., 2000).

To conclude, information supports that QL does not seem to be influenced by etiology, but by the use of acceptance-resignation as coping style. The use of this type of strategies appears within people that regard their disease as non-solving and when facing it, they cannot take any action, with an increased feeling of helplessness.

Our study presents a series of limitations that must be considered facing future investigations, for example, regarding sex distribution in the sample, period of time occurred between the cirrhosis diagnosis and the inclusion on the WL, or the psychosocial and personality factors in the evaluation of QL. According to sex distribution, our sample is not homogeneous because of the predominance of male gender. However, it is representative of the kind of patients which are candidates for liver transplantation at our health centre. Regarding the time between cirrhosis diagnosis and the inclusion on the WL, it is probable that prolongation in time of the disease might be an influent factor on the perception of QL. In any case, the fact that patients with fulminant hepatitis and with a time of permanence inferior to a month have both been excluded, it controls this possible contaminating variable. Besides, Nickel's results show that there is no correlation between the time occurred since the transplantation with neither QL or the coping strategies used (Nickel et al., 2002). On the other hand, other factors that can modulate perception of QL, such as psychosocial factors (e.g. social support, socioeconomic, educational level, etc.) or personality characteristics must be considered in further works studying their interaction with coping strategies, QL and possibly evolution of patients after transplantation.

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