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ΕΡΕΥΝΗΤΙΚΗ ΕΡΓΑΣΙΑ

Complications and long-term quality of life following liver transplantation and major gastrointestinal surgery

OBJECTIVE To record postoperative complications after liver transplantation and other major gastrointestinal surgical procedures and to compare the health-related quality of life (HRQoL) of the patients 7 years after surgery. **METHOD** The study examined two groups of patients who had undergone either orthotopic liver transplantation (n=32) or major surgery for gastrointestinal disease, specifically tumors (n=32), all of whom were in the Intensive Care Unit after surgery for at least 3 days. The complications in the two groups during the immediate postoperative period were recorded, and in the survivors the HRQoL 7 years after surgery was examined using the SF-36 questionnaire, and compared with that of the general population. **RESULTS** The most common complication in patients with liver transplantation was infection (78.1%). In patients with other abdominal surgery the most common complications were renal (46.9%), followed by cardiovascular problems (43.8%) and infection (34.4%). Concerning HRQoL, the SF-36 questionnaire was completed for 43.75% (14/32) of the patients in each group. Only in the domain of "mental health" were significant differences found between the two groups of patients, with the patients who had undergone liver transplantation recording a significantly higher score. The quality of life in other aspects of the survey was similar between the two groups of patients. **CONCLUSIONS** Recognition of complications is essential for planning immediate treatment and thus decreasing morbidity and mortality in patients undergoing major abdominal surgery. Determination of the post-operative HRQoL is particularly important, since the choice of treatment should take into consideration how it may later affect the patient's life.

Over the years, although great progress has been made in the technological, medical and surgical aspects of liver transplantation, it remains a complex process accompanied by significant morbidity.¹ Since the liver is in constant interaction with all the other systems of the human body, a patient undergoing liver transplantation sustains a variety of changes. During the operation and in the immediate postoperative period, the liver is exposed to a variety of potentially harmful agents.¹ In addition, results vary according to factors associated with the donor or the operation itself, or to a possible reaction of the immune system. The postoperative outcome of liver transplantation varies, depending on the pre-operative condition of the patient, the state of the graft and the complexity of the procedure.¹⁻³ Immediate postoperative complications may be related to the functioning of the graft, the surgi-

cal technique, possible infection and the response of the body systems.¹ The survival rates after liver transplantation show an annual increase, with most centers now recording survival rates of up to 90%⁴⁻⁶ at the end of the first year and up to 55-60% for the 9th year post-transplant.^{4,7,8}

Progress in surgical techniques and technological and medical advances made in the field of intensive care have led to a corresponding improvement in survival rates after major surgery for tumors of the gastrointestinal tract. Rapidly evolving diagnostic techniques have expanded the criteria for carrying out more extensive surgery, and for including older patients and those with severe disease requiring more complex treatment.⁹ The survival of these patients is related to various factors, including the size and the location of the tumor, the pre-operative condition of the patient, the time of diagnosis, postoperative complica-

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ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2017, 34(2):221-228

D. Mantas,¹
C. Karounis,²
E. Antoniou,¹
Z. Garoufalia,¹
J. Spyropoulos,²
G. Kouraklis¹

¹Second Department of Propedeutic Surgery, School of Medicine, National and Kapodistrian University of Athens, Athens

²Intensive Care Unit, "Laiko" General Hospital, Athens, Greece

Μετεγχειρητικές επιπλοκές και ποιότητα ζωής μετά από μείζονες ενδοκοιλιακές επεμβάσεις

Περίληψη στο τέλος του άρθρου

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tions and other features.⁴ The current 5-year survival rate for patients who have undergone major abdominal surgery is: for stomach cancer 10–30%,^{10,11} for pancreatic cancer 20–25%^{12–14} and for colorectal cancer with total tumor resection up to 82%.¹⁵ For esophageal adenocarcinoma a 5-year survival rate of 39% has been reported,¹⁶ and for hepatocellular carcinoma 50%.^{4,17}

Several studies have shown that determination of the health-related quality of life (HRQoL) of patients undergoing major surgery is an important component of the evaluation of its success.⁴ All the factors that affect the quality of life of patients must be examined when the consequences of a disease and its treatment are estimated. Most patients are more concerned about the quality of their life after surgery than about longevity.^{18,19} In this way, health professionals are now in a position to inform patients more fully about the surgery and its outcome, enabling them to decide whether to proceed with the surgical treatment of their disease,⁴ and can prepare them for the postoperative period, during which they may need to participate in intervention programs focusing on the areas of their life most affected.²⁰

MATERIAL AND METHOD

This was a retrospective study of two groups of postoperative patients, one of 32 patients who had undergone orthotopic liver transplantation and one of 32 patients who had undergone major surgery for gastrointestinal diseases (tumors). All the surgical interventions had been performed in an Athens General Hospital during the period July 2006 to July 2009 and all the patients had been nursed in the Intensive Care Unit (ICU) after surgery for at least three days. The complications during the immediate postoperative period were retrieved from the records. The HRQoL was examined 7 years postoperatively using the Greek version of the SF-36 questionnaire completed via telephone interview. Table 1 shows the demographic data and information regarding the treatment of the study patients. The average age of the patients with liver transplantation was 51.2 years (SD: 12.1 years), which

was significantly lower than that of the patients operated on for a gastrointestinal tumor, which was 64 years (SD: 15.3 years). The majority in both groups were men (78.1% for liver transplant patients and 59.4% for patients with gastrointestinal tumors). Of the patients having surgery for gastrointestinal tumors, 37.5% had intestinal cancer (intestinal cancer or intestinal cancer and hepatectomy), 25% pancreatic cancer (pancreatic cancer or pancreatic cancer and hepatectomy), 15.6% liver cancer and stomach cancer and 3.1% liver hemangioma and liver tumors. Among the patients having a liver transplant, hepatitis B was the reason for transplantation in the majority of cases (34.4%) and alcoholic liver disease in 12.5%, as also infection with HCV and development of hepatocellular carcinoma, with smaller percentages having primary sclerosing cholangitis, primary biliary cirrhosis, etc.

Preoperatively, 75% of patients who underwent liver transplantation presented portal hypertension, 46.9% hyponatremia and 43.8% encephalopathy. The average MELD score was 20.1 points (SD: 10.2 points), while the average MELD-Na score was 21.1 units (SD: 10.7 units) while 40.6% of patients had a MELD score of less than 15 units.

The patients who had undergone liver transplantation remained intubated and were hospitalized for significantly more days than those with surgery for gastrointestinal tumors. The readmission rates into the ICU were similar (12.5%) for both groups of patients.

RESULTS

Complications

All the patients with liver transplantation (100%), but only 81.3% of the patients who underwent surgery for gastrointestinal tumor experienced at least one post-operative complication. The rates of infections, neurological complications and renal complications that required dialysis were all significantly higher in patients with liver transplantation. The post-operative mortality was 21.9% for patients with liver transplantation and 18.8% for patients with surgery for gastrointestinal tumor (no significant difference). The

Table 1. Clinical data on patients undergoing liver transplantation or other major gastrointestinal surgery.

	Liver transplantation (n=32)		Gastrointestinal surgery (n=32)		p
Age in years: mean (SD)	51.2 (12.1)		64.0 (15.3)		<0.001 ⁺
Sex (n %)	Male	25 78.1%	19 59.4%	59.4%	0.106 [*]
	Female	7 21.9%	13 40.6%	40.6%	
ICU stay in days: mean (SD), median (range)	15.9 (23.3)	10 (8–14.5)	15.8 (32.1)	4.0 (3.0–11.5)	0.002 ⁺⁺
Re-admitted to ICU	No	28 87.5%	28 87.5%	87.5%	1.000 ^{**}
	Yes	4 12.5%	4 12.5%	12.5%	
Intubation days: mean (SD), median (range)	12.3 (21.2)	6.5 (4.0–11.0)	13.0 (29.7)	2 (1–10.5)	0.003 ⁺⁺

⁺Pearson's χ^2 test; ^{**}Fisher's exact test; ^{*}Student's t-test; ⁺⁺Mann-Whitney test; ICU: Intensive care unit, SD: Standard deviation

most common complications in patients with liver transplantation were infection (78.1% of cases), followed by renal (65.6%) and respiratory complications (53.1%). Transplant rejection was recorded in 15.6% of cases. Correlation study of the MELD score and MELD-Na score with complications of patients with liver transplantation revealed a statistically significant association with renal complications requiring hemodialysis after liver transplantation ($p=0.004$ for MELD and $p=0.008$ for MELD-Na).

Encephalopathy, ascites, portal hypertension and hyponatremia in patients who received a liver transplant showed no significant correlation with post-operative complications, apart from hyponatremia which was associated with respiratory complications ($p=0.041$).

The most common complications in patients having surgery for gastrointestinal tumors were renal (46.9%), followed by cardiovascular complications (43.8%) and infection (34.4%).

Patients subjected to liver transplantation

Those undergoing hemodialysis remained intubated for longer than the patients who were not submitted to hemodialysis ($p<0.001$).

Patients subjected to surgery for gastrointestinal tumor

Those who experienced infections and neurological, renal, cardiovascular and respiratory complications, and who underwent hemodialysis, remained intubated for longer than the patients who did not present such complications

($p<0.001$, $p=0.009$, $p=0.008$, $p=0.011$, $p=0.001$, and $p=0.003$, respectively). The duration of intubation was significantly higher in patients who subsequently died (either in hospital or after discharge), compared with patients who survived ($p=0.02$, and $p=0.003$). Patients who had experienced at least one complication remained intubated for longer than patients who experienced no complications ($p=0.009$).

Patients subjected to liver transplantation

Those who experienced infection or respiratory complications and underwent hemodialysis had a significantly longer ICU stay than patients without such complications ($p=0.006$, $p=0.001$, and $p<0.001$).

Patients subjected to surgery for gastrointestinal tumor

Those who experienced infection or neurological, renal, cardiovascular or respiratory complications, and underwent dialysis, had a significantly longer ICU stay than patients who did not present such complications ($p=0.001$, $p=0.011$, $p=0.009$, $p=0.049$, $p=0.002$, and $p=0.004$, respectively). In cases where the patient died the length of stay in the ICU was significantly higher than that of patients who survived ($p=0.006$). Patients who had at least one complication had a significantly longer ICU stay compared with patients who had no complications ($p=0.005$).

Health-related quality of life

Table 2 shows the HRQoL of patients 7 years after surgery, according to the SF-36 questionnaire. The question-

Table 2. Quality of life 7 years after surgery in patients undergoing liver transplantation or other major gastrointestinal surgery (based on the SF-36 questionnaire).

	Liver transplantation		Gastrointestinal surgery		p Student's t-test
	Mean	SD	Mean	SD	
1. Body function	76.8	28.1	5.6	22.1	0.068
2. Physical role	57.1	43.2	57.1	3.1	1.000
3. Bodily pain	79.4	31.3	71.6	22.4	0.456
4. General health	65.1	17.9	58.4	18.6	0.335
5. Vitality	63.6	17.6	58.6	14.3	0.417
6. Social role	76.8	25.4	71.4	15.8	0.509
7. Emotional involvement	69.0	44.3	42.9	42.2	0.121
8. Mental health	66.0	15.7	53.7	14.4	0.040
A. Brief physical health scale	47.6	11.1	45.3	8.8	0.551
B. Brief mental health scale	47.0	9.0	41.3	8.9	0.102

SD: Standard deviation

naire was answered by 43.75% (14/32) of the patients in each group, the rest of them having died.

Only in the domain of "mental health" were there significant differences between the two groups. Specifically, the patients with liver transplantation reported a significantly higher score, i.e., better mental health, compared with the patients who had undergone gastrointestinal tumor surgery. The reported quality of life in the other aspects of the survey was similar in the two groups of patients.

Correlation between HRQoL and the demographic and clinical characteristics of patients with liver transplantation

This study showed no significant correlation between the HRQoL of patients after liver transplantation with their demographic and clinical characteristics.

Correlation between the HRQoL and the demographic and clinical characteristics of patients with gastrointestinal tumor surgery

On the SF-36, the men recorded significantly higher scores on the items "body function", "general health", "vitality", "emotional involvement", "mental health" and "brief mental health scale", indicating better quality of life in these areas, in comparison with the women.

Significant inverse correlation was recorded between the items "physical function" and "general health" and the age of the patients, the older patients presenting worse physical function and overall health.

The study showed no correlation between the duration of hospitalization and intubation of patients with any item of HRQoL on the SF-36.

Comparison of the quality of life of patients with liver transplantation with that of the general population

In this study, patients 7 years after liver transplantation demonstrated a significant lower mean score in the item "physical role" than that recorded in the general population using the SF-36 questionnaire. In all other aspects of quality of life, this study demonstrated no significant difference (tab. 3).

Comparison of the quality of life of patients with gastrointestinal tumor, with that of the general population

This study showed that patients 7 years after surgery for gastrointestinal tumor had significantly lower scores in the items "body function", "physical role", "emotional involvement" and "mental health" than those recorded in the general population. In all other items on SF-36 this study demonstrated no significant difference (tab. 4).

DISCUSSION

With the development of improved surgical technique and technical equipment the survival rate after major surgery is constantly rising, although various factors continue to be associated with a poor prognosis. The better understanding of these factors may help to optimize the management of conditions requiring major abdominal surgery, thus contributing to further improvement in survival rates and in the quality of life of the patients post-operatively.²¹

In the present study the most frequent complication in patients undergoing liver transplantation was infection. Although currently several preventive measures are utilized,

Table 3. Comparison of the quality of life of patients after liver transplantation with that of the general population (based on the SF-36 questionnaire).

	Liver transplantation			General population*			p Student's t-test
	n	Mean	SD	n	Mean	SD	
1. Body function	14	76.8	28.1	1,007	80.76	25.62	0.566
2. Physical role	14	57.1	43.2	1,007	79.74	37.72	0.026
3. Bodily pain	14	79.4	31.3	1,007	72.98	31.66	0.892
4. General health	14	65.1	17.9	1,007	67.46	23.54	0.704
5. Vitality	14	63.6	17.6	1,007	66.53	22.39	0.805
6. Social role	14	76.8	25.4	1,007	82.05	28.12	0.487
7. Emotional involvement	14	69.0	44.3	1,007	81.53	36.31	0.201
8. Mental health	14	66.0	15.7	1,007	68.23	21.26	0.695

*Pappa et al⁴⁰

SD: Standard deviation

Table 4. Comparison of the quality of life of patients with gastrointestinal surgery, with the general population.

	Gastrointestinal surgery			General population*			p Student's t-test
	n	Mean	SD	n	Mean	SD	
1. Body function	14	58.6	22.1	1,007	80.76	25.62	0.001
2. Physical role	14	57.1	33.1	1,007	79.74	37.72	0.025
3. Bodily pain	14	71.6	22.4	1,007	72.98	31.66	0.872
4. General health	14	58.4	18.6	1,007	67.46	23.54	0.152
5. Vitality	14	58.6	14.3	1,007	66.53	22.39	0.186
6. Social role	14	71.4	15.8	1,007	82.05	28.12	0.157
7. Emotional involvement	14	42.9	42.2	1,007	81.53	36.31	<0.001
8. Mental health	14	53.7	14.4	1,007	68.23	21.26	0.011

*Pappa et al⁴⁰

SD: Standard deviation

such as antimicrobial prophylaxis, vaccination, etc., infection continues to be a major cause of morbidity and mortality after liver transplantation.²¹ Approximately 80% of liver transplant recipients are estimated to develop at least one infection during the first year after liver transplantation, some of which are fatal.²²

Approximately 25% of candidates for liver transplantation show some degree of renal insufficiency prior to transplantation, while approximately 2/3 of liver transplant recipients develop impaired renal function after liver transplantation.²³ In this study the diagnostic criterion for renal dysfunction was a serum creatinine level of over 2 mg/dL, according to which 65.6% of the liver recipients demonstrated renal complications. Similar studies^{24,25} report renal complications in 64% of patients, using as a diagnostic criterion creatinine >1.5 mg/dL. Additionally, other studies indicate that 8–10% of liver recipients will need to undergo dialysis in the immediate postoperative period,^{26,27} and a percentage of 17% has been reported.²⁸ In the present series, 28.1% of liver recipients required hemodialysis, and the MELD score and MELD-Na scores were shown to be correlated with the need for dialysis, in agreement with Sanchez and colleagues who cited as one of the predictors for hemodialysis a MELD score of >21.²⁹

Respiratory complications were the third most common complication following liver transplantation, at a rate of 53.1%, in line with other authors who reported respiratory complications in 42.1–68.0% of patients.^{30–32}

Mortality after major surgery for tumors of the gastrointestinal tract may reach 17%,³³ but usually ranges from 3% to 7%.^{34–36} The present study recorded a mortality of 18.8%. This figure is relatively high, probably due to the fact that the study included only patients admitted to

the ICU after surgery and thus belonged to the group at highest risk. For the same reason, 81.3% of the patients in this study presented at least one complication, in contrast with 33.5% in another published series.³⁷ In that study, delirium was the most frequent complication, in 12.8% of patients, which was the 8th most frequent complication in the present study (in 9.4% of the patients), consistent with other references.^{38,39} Finally, the average stay in the ICU after surgery for gastrointestinal tumor was reported to be 4.4 days,³⁷ as in the present study (4 days).

Regarding the quality of life of patients after liver transplantation, their mean score on the item "physical role" on the SF-36 questionnaire was significantly lower than that of the general population, as in two other studies,^{40,41} which concluded that the main differences in the quality of life of liver transplant recipients from the general population concerned physical functions. Similar findings obtained from 5 other studies vividly indicated that although liver transplant recipients achieve a fairly satisfactory quality of life in general, and for physical activities, the level is lower than that of the general population.^{42–45}

The present study also demonstrated that the men who had undergone surgery for gastrointestinal tumor had better scores on the items "body function," "general health," "vitality," "emotional involvement," "mental health" and "brief mental health scale" than the women. As reported in the literature, women tend to report greater morbidity than men, possibly because of differences in their perception of the disease rather than substantial differences regarding the disease *per se*.^{46,47} Other studies, however, disagree with this hypothesis, claiming that the differences in morbidity between the two sexes are due to substantial variation in health-related issues^{48,49} which originate from social and psychological factors.^{50,51}

Only a few studies have examined the long-term quality of life of patients undergoing major surgery for tumors of the gastrointestinal tract in comparison with the general population. In the present study the patients who underwent surgery for gastrointestinal tumors showed significantly lower scores than the general population on the SF-36 items "body function", "physical role", "emotional involvement" and "mental health". Huang and colleagues⁵² reported that patients who had undergone Whipple resection for adenocarcinoma had significantly lower scores in physical and psychological health. In the study of Billings and colleagues⁵³ patients after total pancreatectomy scored significantly lower in the items "physical role" and "general health" than the rating of the general population. A review article on HRQoL after gastrectomy for gastric cancer showed improvement between the 6th month and the first year after surgery, but after 5 years it is not maintained at the same level.⁵⁴ Conversely, the quality of life of patients surviving colon cancer tends to improve as the survival is prolonged,⁵⁵ although another study showed that 10–26% of patients are dissatisfied with their physical performance, their mental function, their financial situation and sexual function.⁵⁶ A more recent study concluded that the negative impact of colorectal cancer was more significant during the first 3 years after diagnosis.⁵⁷ In a study of females who survived colon cancer, while no significant differences were demonstrated in their quality of life from that of the general population, the HRQoL scores of women were observed to be generally lower than those of men.⁵⁸ Finally, the present study showed a significant inverse correlation between the items "physical function" and "general health" and the age of patients, a finding consistent with other studies.⁵⁹

In conclusion, the immediate postoperative complications in patients undergoing liver transplantation are related

to the function of the graft, the surgical technique, possible infection and the impact on the body systems. The survival of patients following other major gastrointestinal surgical procedures may be related to various factors including the size and the location of the tumor, the pre-operative condition of the patient, the time of diagnosis, postoperative complications, etc. Determination of the HRQoL of patients undergoing major surgery is also necessary, and most patients are concerned more about the quality of their life after surgery than about longevity. To summarize the main findings of this study, it can be observed that the most common complications in patients with liver transplantation were infections, followed by renal and respiratory complications, while graft rejection was recorded in only 15.6% of cases. The most common complications in patients who had undergone surgery for gastrointestinal tumors were renal, followed by cardiovascular complications and infections. In the HRQoL 7 years after surgery only the item "mental health" showed significant differences between the two patient groups with those who had undergone liver transplantation demonstrating a significantly higher score, i.e. better mental health, than the patients with gastrointestinal tumor surgery. The scores on the other items of HRQoL were similar in the two groups of patients.

The early recognition of complications after major abdominal surgery is absolutely essential in order to plan immediate intervention and thus decrease morbidity and mortality. The determination of HRQoL after such operations is particularly important, since knowledge of how it may affect the patient's later life influences the choice of possible treatment. Consequently, the expected quality of life should be calculated in the design of the treatment of any disease, so that the patient receives better information on how to confront the disease.

ΠΕΡΙΛΗΨΗ

Μετεγχειρητικές επιπλοκές και ποιότητα ζωής μετά από μείζονες ενδοκοιλιακές επεμβάσεις

Δ. ΜΑΝΤΑΣ,¹ Χ. ΚΑΡΟΥΝΗ,² Ε. ΑΝΤΩΝΙΟΥ,¹ Ζ. ΓΑΡΟΥΦΑΛΙΑ,¹ Ι. ΣΠΥΡΟΠΟΥΛΟΣ,² Γ. ΚΟΥΡΑΚΛΗΣ¹

¹Β' Προπαιδευτική Χειρουργική Κλινική, Ιατρική Σχολή, Εθνικό και Καποδιστριακό Πανεπιστήμιο Αθηνών, Αθήνα,

²Μονάδα Εντατικής Θεραπείας, Γενικό Νοσοκομείο Αθηνών «Λαϊκό», Αθήνα

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ΣΚΟΠΟΣ Η καταγραφή των μετεγχειρητικών επιπλοκών μετά από μεταμόσχευση ήπατος και μείζονες ογκολογικές επεμβάσεις, η διερεύνηση συσχέτισής τους με την προεγχειρητική κατάσταση των ασθενών και με τον χρόνο διασωλήνωσης και παραμονής στη μονάδα εντατικής θεραπείας (ΜΕΘ). Ο προσδιορισμός της ποιότητας ζωής των δύο ομάδων σε χρονικό διάστημα >7 έτη μετά τη χειρουργική επέμβαση, η σύγκριση των δύο ομάδων μεταξύ τους και με τον γενικό πληθυσμό. **ΥΛΙΚΟ-ΜΕΘΟΔΟΣ** Αναδρομική μελέτη που εξέτασε δύο ομάδες ασθενών, 32 ασθενείς που υποβλήθηκαν σε ορθοτοπική μεταμόσχευση ήπατος και 32 ασθενείς που υποβλήθηκαν σε μείζονες ογκολογικές επεμβάσεις. Οι ασθενείς νοσηλεύτηκαν στη ΜΕΘ για τουλάχιστον 3 ημέρες. Για τον προσδιορισμό της σχετιζόμενης με την

υγεία ποιότητας ζωής χρησιμοποιήθηκε το ερωτηματολόγιο SF-36, το οποίο συμπληρώθηκε μέσω τηλεφωνικής συνέντευξης. **ΑΠΟΤΕΛΕΣΜΑΤΑ** Οι συχνότερες επιπλοκές σε ασθενείς που υποβλήθηκαν σε μεταμόσχευση ήπατος ήταν οι λοιμώξεις (78,1%), ενώ στη δεύτερη ομάδα συχνότερες ήταν οι νεφρολογικές επιπλοκές (46,9%), ακολουθούμενες από καρδιαγγειακές επιπλοκές (43,8%) και από λοιμώξεις (34,4%). Όσον αφορά στην ποιότητα ζωής, υπήρξαν σημαντικές διαφορές μόνο αναφορικά με τη διάσταση «ψυχική υγεία». Η ποιότητα ζωής στις υπόλοιπες διαστάσεις ήταν παρόμοια μεταξύ των δύο ομάδων ασθενών. Για ασθενείς με μεταμόσχευση ήπατος, η βαθμολογία στη διάσταση «σωματικός ρόλος» ήταν σημαντικά χαμηλότερη σε σύγκριση με αυτή του γενικού πληθυσμού, ενώ για ασθενείς με όγκο γαστρεντερικού η βαθμολογία στις διαστάσεις «σωματική λειτουργικότητα», «σωματικός ρόλος», «ρόλος συναισθηματικός» και «ψυχική υγεία» ήταν σημαντικά χαμηλότερη σε σύγκριση με εκείνη του γενικού πληθυσμού. **ΣΥΜΠΕΡΑΣΜΑΤΑ** Απαιτείται έγκαιρη αναγνώριση των επιπλοκών μετά από μείζονες χειρουργικές επεμβάσεις, ώστε να σχεδιάζεται άμεσα η στρατηγική αντιμετώπισής τους και να μειώνεται η νοσηρότητα και η θνητότητα των ασθενών. Εκτός από την επιβίωση, θα πρέπει να υπολογίζεται στον σχεδιασμό της θεραπείας κάθε ασθένειας και η αναμενόμενη ποιότητα ζωής, έτσι ώστε ο ασθενής να λαμβάνει πληρέστερη ενημέρωση για τους τρόπους αντιμετώπισης της ασθένειάς του.

Λέξεις ευρητηρίου: Επιπλοκές, Μεταμόσχευση ήπατος, Ποιότητα ζωής, Χειρουργική γαστρεντερικού συστήματος

References

- MORENO R, BERENQUER M. Post-liver transplantation medical complications. *Ann Hepatol* 2006, 5:77–85
- KEEFFE EB. Liver transplantation: Current status and novel approaches to liver replacement. *Gastroenterology* 2001, 120:749–762
- MURRAY KF, CARITHERS RL Jr; AASLD. AASLD practice guidelines: Evaluation of the patient for liver transplantation. *Hepatology* 2005, 41:1407–1432
- MANTAS D, KAROUNIS C, KOSTAKIS ID, ANTONIOU E, KOURAKLIS G. Quality of life after liver transplantation or surgery for cancers of the digestive system. *Hellen J Surg* 2014, 86:257–264
- SMITH CM, DAVIES DB, McBRIDE MA. Liver transplantation in the United States: A report from the UNOS Liver Transplant Registry. *Clin Transpl* 1999:23–34
- NORDIC LIVER TRANSPLANTATION GROUP. Annual report 2011. NLTG, 2012. Available at: http://www.scandiarttransplant.org/members/nltr/NUUAL_REPORT_2011.pdf
- SEABERG EC, BELLE SH, BERINGER KC, SCHIVINS JL, DETRE KM. Liver transplantation in the United States from 1987–1998: Updated results from the Pitt-UNOS Liver Transplant Registry. *Clin Transpl* 1998:17–37
- SEABERG EC, BELLE SH, BERINGER KC, SCHIVINS JL, DETRE KM. Long-term patient and retransplantation-free survival by selected recipient and donor characteristics: An update from the Pitt-UNOS Liver Transplant Registry. *Clin Transpl* 1997:15–28
- GOUILLAT C, GIGOT JF. Pancreatic surgical complication – the case for prophylaxis. *Gut* 2001, 49(Suppl 4):iv32–iv39
- GREEN D, PONCE DE LEON S, LEON-RODRIGUEZ E, SOSA-SANCHEZ R. Adenocarcinoma of the stomach: Univariate and multivariate analysis of factors associated with survival. *Am J Clin Oncol* 2002, 25:84–89
- HARRISON LE, KARPEH MS, BRENNAN MF. Extended lymphadenectomy is associated with a survival benefit for nude-negative gastric cancer. *J Gastrointest Surg* 1998, 2:126–131
- WAGNER M, REDAELLI C, LIETZ M, SEILER CA, FRIESS H, BÜCHLER MW. Curative resection is the single most important factor determining outcome in patients with pancreatic adenocarcinoma. *Br J Surg* 2004, 91:586–594
- CONLON KC, KLIMSTRA DS, BRENNAN MF. Long-term survival after curative resection for pancreatic ductal adenocarcinoma. Clinicopathologic analysis of 5-years survivors. *Ann Surg* 1996, 223:273–279
- BACHMANN J, MICHALSKI CW, MARTIGNONI ME, BÜCHLER MW, FRIESS H. Pancreatic resection for pancreatic cancer. *HPB (Oxford)* 2006, 8:346–351
- ANDREONI B, CHIAPPA A, BERTANI E, BELLOMI M, ORECCHIA R, ZAMPINO M ET AL. Surgical outcomes for colon and rectal cancer over a decade: Results from a consecutive monocentric experience in 902 unselected patients. *World J Surg Oncol* 2007, 5:73
- POLEDNAK AP. Trends in survival for both histologic types of esophageal cancer in US surveillance, epidemiology and end results areas. *Int J Cancer* 2003, 105:98–100
- MAKUUCHI M, SANO K. The surgical approach to HCC: Our progress and results in Japan. *Liver Transpl* 2004, 10(Suppl 2):S46–S52
- GAGE BF, CARDINALI AB, OWENS DK. The effect of stroke and stroke prophylaxis with aspirin or warfarin on quality of life. *Arch Intern Med* 1996, 156:1829–1836
- McNEIL BJ, WEICHELBAUM R, PAUKER SG. Speech and survival: Tradeoffs between quality and quantity of life in laryngeal cancer. *N Engl J Med* 1981, 305:982–987
- BRAVATA DM, OLKIN I, BARNATO AE, KEEFFE EB, OWENS DK. Health-related quality of life after liver transplantation: A meta-analysis. *Liver Transpl Surg* 1999, 5:318–331
- ROMERO FA, RAZONABLE RR. Infections in liver transplant recipients. *World J Hepatol* 2011, 3:83–92
- KAWECKI D, CHMURA A, PACHOLCZYK M, LAGIEWSKA B, ADADYNSKI L, WASIAK D ET AL. Bacterial infections in the early period after liver transplantation: Etiological agents and their susceptibility. *Med Sci Monit* 2009, 15:CR628–CR637
- RIMOLA A, GAVALER JS, SCHADE RR, EL-LANKANY S, STARZL TE, VAN THIEL DH. Effects of renal impairment on liver transplantation. *Gastroenterology* 1987, 93:148–156
- CAMPBELL MS, KOTLYAR DS, BRENSINGER CM, LEWIS JD, SHETTY

- K, BLOOM RD ET AL. Renal function after orthotopic liver transplantation is predicted by duration of pretransplantation creatinine elevation. *Liver Transpl* 2005, 11:1048–1055
25. LEBRÓN GALLARDO M, HERRERA GUTIERREZ ME, SELLER PÉREZ G, CURIEL BALSERA E, FERNÁNDEZ ORTEGA JF, QUESADA GARCÍA G. Risk factors for renal dysfunction in the postoperative course of liver transplant. *Liver Transpl* 2004, 10:1379–1385
 26. FAENZA S, SANTORO A, MANCINI E, PARESCHI S, SINISCALCHI A, ZANZANI C ET AL. Acute renal failure requiring renal replacement therapy after orthotopic liver transplantation. *Transplant Proc* 2006, 38:1141–1142
 27. CONTRERAS G, GARCÉS G, QUARTIN AA, CELY C, LaGATTA MA, BARRETO GA ET AL. An epidemiologic study of early renal replacement therapy after orthotopic liver transplantation. *J Am Soc Nephrol* 2002, 13:228–233
 28. LEWANDOWSKA L, MATUSZKIEWICZ-ROWINSKA J. Acute kidney injury after procedures of orthotopic liver transplantation. *Ann Transplant* 2011, 16:103–108
 29. SANCHEZ EQ, GONWA TA, LEVY MF, GOLDSTEIN RM, MAI ML, HAYS SR ET AL. Preoperative and perioperative predictors of the need for renal replacement therapy after orthotopic liver transplantation. *Transplantation* 2004, 78:1048–1054
 30. HONG SK, HWANG S, LEE SG, LEE LS, AHN CS, KIM KH ET AL. Pulmonary complications following adult liver transplantation. *Transplant Proc* 2006, 38:2979–2981
 31. JIANG GQ, PENG MH, YANG DH. Effect of perioperative fluid therapy on early phase prognosis after liver transplantation. *Hepatobiliary Pancreat Dis Int* 2008, 7:367–372
 32. BOZBAS SS, EYUBOGLU FO, OZTURK ERGUR F, GULLU ARSLAN N, SEVMIS S, KARAKAYALIH ET AL. Pulmonary complications and mortality after liver transplant. *Exp Clin Transplant* 2008, 6:264–270
 33. WILSON J, WOODS I, FAWCETT J, WHALL R, DIBB W, MORRIS C ET AL. Reducing the risk of major elective surgery: Randomised controlled trial of preoperative optimization of oxygen delivery. *Br Med J* 1999, 318:1099–1103
 34. DIMICK JB, COWAN JA Jr, UPCHURCH GR Jr, COLLETTI LM. Hospital volume and surgical outcomes for elderly patients with colorectal cancer in the United States. *J Surg Res* 2003, 114:50–56
 35. GHAFERI AA, BIRKMEYER JD, DIMICK JB. Variation in hospital mortality associated with inpatient surgery. *N Engl J Med* 2009, 361:1368–1375
 36. NOORDZIJ PG, POLDERMANS D, SCHOUTEN O, BAX JJ, SCHREINER FA, BOERSMA E. Postoperative mortality in the Netherlands: A population-based analysis of surgery-specific risk in adults. *Anesthesiology* 2010, 112:1105–1115
 37. JAKOBSON T, KARJAQIN J, VIPP L, PADAR M, PARIK AH, STARKOPF L ET AL. Postoperative complications and mortality after major gastrointestinal surgery. *Medicina (Kaunas)* 2014, 50:111–117
 38. ALDEMIR M, OZEN S, KARA IH, SIR A, BAÇ B. Predisposing factors for delirium in the surgical intensive care unit. *Crit Care* 2001, 5:265–270
 39. SERAFIM RB, DUTRA MF, SADDY F, TURA B, DE CASTRO JE, VILLARINHO LC ET AL. Delirium in postoperative nonventilated intensive care patients: Risk factors and outcomes. *Ann Intensive Care* 2012, 2:51
 40. PAPPA E, KONTODIMOPOULOS N, NIAKAS D. Validating and norming of the Greek SF-36 Health Survey. *Qual Life Res* 2005, 14:1433–1438
 41. PAINTER P, KRASNOFF J, PAUL SM, ASCHER NL. Physical activity and health-related quality of life in liver transplant recipients. *Liver Transpl* 2001, 7:213–219
 42. HELLGREN A, BERGLUND B, GUNNARSSON U, HANSSON K, NORBERG U, BÄCKMAN L. Health-related quality of life after liver transplantation. *Liver Transpl Surg* 1998, 4:215–221
 43. HUNT CM, TART JS, DOWDY E, BUTE BP, WILLIAMS DM, CLAVIEN PA. Effect of orthotopic liver transplantation on employment and health status. *Liver Transpl Surg* 1996, 2:148–153
 44. DUFFY JP, KAO K, KO CY, FARMER DG, McDIARMID SV, HONG JC ET AL. Long-term patient outcome and quality of life after liver transplantation: Analysis of 20-year survivors. *Ann Surg* 2010, 252:652–661
 45. BRYAN S, RATCLIFFE J, NEUBERGER JM, BORROUGHS AK, GUNSON BK, BUXTON MJ. Health-related quality of life following liver transplantation. *Qual Life Res* 1998, 7:115–120
 46. VERBRUGGE LM. Females and illness: Recent trends in sex differences in the United States. *J Health Soc Behav* 1976, 17:387–403
 47. VERBRUGGE LM. Sex differentials in morbidity and mortality in the United States. *Soc Biol* 1976, 23:275–296
 48. CLEARY PD, MECHANIC D, GREENLEY JR. Sex differences in medical care utilization: An empirical investigation. *J Health Soc Behav* 1982, 23:106–119
 49. MARSHALL JR, GREGORIO DI, WALSH D. Sex differences in illness behavior: Care seeking among cancer patients. *J Health Soc Behav* 1982, 23:197–204
 50. NATHANSON CA. Illness and the feminine role: A theoretical review. *Soc Sci Med* 1975, 9:57–62
 51. GOVE WR, HUGHES M. Possible causes of the apparent sex differences in physical health: An empirical investigation. *Am Sociol Rev* 1979, 44:126–146
 52. HUANG JJ, YEO CJ, SOHN TA, LILLEMÖE KD, SAUTER PK, COLEMAN J ET AL. Quality of life and outcomes after pancreaticoduodenectomy. *Ann Surg* 2000, 231:890–898
 53. BILLINGS BJ, CHRISTEIN JD, HARMSEN WS, HARRINGTON JR, CHARIST, QUE FG ET AL. Quality-of-life after total pancreatectomy: Is it really that bad on long-term follow-up? *J Gastrointest Surg* 2005, 9:1059–1066
 54. SHAN B, SHAN L, MORRIS D, GOLANI S, SAXENA A. Systematic review on quality of life outcomes after gastrectomy for gastric carcinoma. *J Gastrointest Oncol* 2015, 6:544–560
 55. SCHAG CA, GANZ PA, WING DS, SIM MS, LEE JJ. Quality of life in adult survivors of lung, colon and prostate cancer. *Qual Life Res* 1994, 3:127–141
 56. MUTHNY FA, KOCH U, STUMP S. Quality of life in oncology patients. *Psychother Psychosom* 1990, 54:145–160
 57. RAMSEY SD, ANDERSEN MR, ETZIONI R, MOINPOUR C, PEACOCK S, POTOSKY A ET AL. Quality of life in survivors of colorectal carcinoma. *Cancer* 2000, 88:1294–1303
 58. MOSCONI P, APOLONE G, BARNI S, SECONDINO S, SBANOTTO A, FILIBERTI A. Quality of life in breast and colon cancer long-term survivors: An assessment with the EORTC QLQ-C30 and SF-36 questionnaires. *Tumori* 2002, 88:110–116
 59. WU CW, CHIOU JM, KO FS, LO SS, CHEN JH, LUI WY ET AL. Quality of life after curative gastrectomy for gastric cancer in a randomised controlled trial. *Br J Cancer* 2008, 98:54–59

Corresponding author:

D. Mantas, 17 Agiou Thoma street, GR-115 27 Athens, Greece
e-mail: dvmantas@med.uoa.gr