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Quality of life assessment in patients treated due to chronic pancreatitis

Procena kvaliteta života bolesnika lečenih zbog hroničnog pankreatitisa

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Abstract

Background/Aim. Chronic pancreatitis (CP) causes inflammatory changes in the tissue of the pancreas, resulting in irreversible tissue damage. Pain, endocrine, and exocrine pancreatic insufficiency develop, thereby reducing the quality of life (QoL) of patients. The aim of the study was to determine the significance of surgical treatment in improving the QoL of patients with CP. **Methods.** QoL assessment of 50 patients diagnosed with CP was performed using a certified Euro Quality of Life-5 Dimension-5 Level (EuroQol-5D-5L) Questionnaire translated into Serbian. According to the method of treatment, patients completed the questionnaire. Patients were divided into two groups (conservatively treated – CT and surgically treated – ST), and all comparisons were made between groups. **Results.** Patients in stage B of CP were divided into two groups of 25 patients. The mean age in the ST group was 48.56 ± 11.91, and in the CT group was 51.08 ± 11.61 ($p = 0.452$). The male/female ratio in the ST group was 18/7, and in the CT group was 22/3 ($p = 0.289$). Pain in the ST group was present in 23 patients, and in the CT group was present in 18 patients ($p = 0.141$). Loss of appetite in the ST group was present in 7 patients and in the CT group in 10 patients ($p = 0.256$). Weight loss in both groups was equal ($p = 1.000$). Based on the EuroQol-5D-5L Questionnaire, significant differences were found ($p < 0.001$) between groups in Mobility and Pain/Discomfort, in Anxiety/Depression ($p = 0.003$), in Self-care ($p = 0.004$), and in Usual activities ($p = 0.008$). **Conclusion.** CP significantly reduces the QoL of patients treated either conservatively or by surgical approach. This study showed that surgical treatment is more beneficial for the QoL of patients with CP than the conservative approach.

Key words:
drug therapy; pancreatitis, chronic; quality of life; surgical procedures, operative; surveys and questionnaires.

Apstrakt

Uvod/Cilj. Hronični pankreatitis (HP) izaziva zapaljenske promene u tkivu pankreasa, što dovodi do nepovratnog oštećenja tkiva. Razvijaju se bol, endokrina i egzokrina insuficijencija pankreasa, čime se smanjuje kvalitet života (KŽ) bolesnika. Cilj rada bio je da se utvrdi značaj hirurškog lečenja za poboljšanje KŽ bolesnika sa HP. **Metode.** Procena KŽ 50 bolesnika kojima je dijagnostikovan HP izvršena je korišćenjem sertifikovanog upitnika *Euro Quality of Life-5 Dimension-5 Level* (*EuroQol-5D-5L*) prevedenog na srpski jezik. Bolesnici su popunili upitnik, a zatim podeljeni u dve grupe (konzervativno lečeni – KL i hirurški lečeni bolesnici – HL) između kojih su izvršena sva poređenja. **Rezultati.** Bolesnici u B stadijumu HP podeljeni su u dve grupe od po 25 bolesnika. Prosečna starost u HL grupi iznosila je 48,56 ± 11,91 godina, a u KL grupi 51,08 ± 11,61 godina (p = 0,452). Odnos muškaraca i žena u HL grupi bio je 18/7, a u KL grupi 22/3 (p = 0,289). Bol u HL grupi bio je prisutan kod 23 bolesnika, a u KL grupi kod 18 bolesnika (p = 0,141). Gubitak apetita u HL grupi bio je prisutan kod 7 bolesnika, a u KL grupi kod 10 bolesnika (p = 0,256). Smanjenje telesne mase bilo je jednako u obe grupe (p =

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1,000). Na osnovu EuroQol-5D-5L upitnika utvrđene su značajne razlike (p <0,001) između grupa u pokretljivosti i bolu/nelagodnosti, anksioznosti/depresiji (p = 0,003), u samopomoći (p = 0.004), i u uobičajenoj aktivnosti (p = 0,008). **Zaključak.** HP značajno smanjuju KŽ bolesnika koji se leče i konzervativnim i hirurškim pristupom. Ova studija je pokazala da je hirurško lečenje korisnije za KŽ od konzervativnog lečenja kod bolesnika sa HP.

Ključne reči:
lečenje lekovima; pankreatitis, hronični; kvalitet života; hirurgija, operativne procedure; ankete i upitnici.

Introduction

Chronic pancreatitis (CP) is an inflammatory disease characterized by irreversible damage to the pancreatic tissue caused by chronic inflammation, loss of acinar cells, and sclerosis. The functional impairment comprises the reduced secretion of digestive enzymes and the gradual exocrine and endocrine pancreatic insufficiency causing pain, maldigestion, and loss of body mass, consequently leading to the deterioration of the quality of life (QoL) [1–7]. CP development is related to alcohol abuse, smoking, and poor living conditions [1–4], and apart from the individual, CP bears significant social and economic impact due to its prevalence of 27.4 cases per 100,000 people [1–3].

As CP is an incurable, progressive disease, the treatment is aimed at improving symptoms and QoL. Initial treatment for uncomplicated cases is usually conservative and includes alcohol and smoking cessation, the use of supplements including pancreatic enzymes, proton pump inhibitors, and symptomatic treatment. Surgical and interventional procedures are reserved for the cases with CP resistant to conservative treatment and complications, which are quite common (increased intrapancreatic pressure, pseudocysts, fistulas or abscesses, stenosis of the duodenum and bile duct, calculus, vascular disorders, and neoplasms) [5–10].

One of the most important indicators of successful treatment of CP is QoL [11, 12]. The CP reduces QoL, with a significant impact on mental and physical health [12–14]. Various instruments were employed for the assessment of QoL in these patients with variable relevance. Several studies confirmed that pain is the most important single contributor to QoL decrease. With higher stages of CP, the pain is more intense, and, therefore, the QoL is worse [11–13, 15]. In addition to chronic pain, malnutrition poses an additional significant factor. Based on published data, the surgical or endoscopic approach in treating CP patients efficiently decreases symptoms including pain, nausea, and fatigue and consequentially improves the QoL [13, 15–23]. Nevertheless, no ideal procedure or specific guidelines for the treatment of CP are available, and the decision on using specific surgical procedures (drainage, resection, drainage and resection, denervation, etc.) is complicated [17–24].

The aim of this study was to evaluate QoL in surgically and conservatively treated patients with CP using the Euro Quality of Life-5 Dimension-5 Level (EQ-5D-5L) Questionnaire, as well as to prove that the EQ-5D-5L is easy to perform, that it is not a long-term questionnaire and may be useful in assessing the transition from conservative to surgical treatment of patients with CP in clinical practice.

Methods

Study design

The study protocol was approved by the Ethics Committee of the Military Medical Academy in Belgrade (November 2, 2018), and informed patient consent was obtained. The study was conducted as a cross-sectional observational study and included 50 patients with CP treated for over 10 years, from January 1, 2008, to December 31, 2017. Two 25-patient groups were defined based on the treatment applied – patients treated with surgical procedures and patients treated with conservative treatment at the Clinic for General Surgery and Clinic for Gastroenterology of the Military Medical Academy in Belgrade.

The study inclusion criteria were the diagnosis of CP based on symptom persistence, biochemical and radiological analyses in stage B, patients aged between 18 and 80 years, in a good living environment, with a history of discomfort of at least two years, and patients expected to respond to therapy without paradoxical events. Exclusion criteria from the study were the inability to give informed patient consent to participate in the study, patients who did not wish to participate in the survey, and mentally disabled patients. Patients completed the questionnaire independently. An investigator ensured that all questions were answered; all data were kept confidential.

Quality of life assessment

For the QoL assessment, we used the validated EQ-5D-5L Questionnaire, which was translated into Serbian and approved by the EuroQoL Group [25]. The EQ-5D-5L Questionnaire contains five dimensions: mobility, personal care, usual activities, pain/discomfort, and anxiety/depression. In each dimension, patients are classified into five functional levels [25]. The respondent marks one of the cubes which most closely describes his or her health status on the day of the interview in each of the five dimensions. Each answer is evaluated by a single digit from 1 to 5 [25].

The second instrument in the assessment was a Visual Analogue Scale (VAS), 20 cm long, marked from 0 to 100. The worst health imaginable is marked with 0 and the best with 100 [25]. Following the patient's informed consent about data confidentiality and participation in the study, they were familiarized with the survey and its filling. Patients completed the questionnaire independently without the presence of medical staff.

Statistical analysis

All attribute variables were presented in the form of frequencies of particular categories, and statistical significance between the categories was tested by the χ^2 test. All continuous variables are presented as mean ± standard deviation (SD). The Mann-Whitney *U* test or Student *t*-test were applied for differences in continuous variables, depending on the normality of the distribution based on the Kolmogorov-Smirnov test. All analyses were estimated at the level of statistical significance of $p < 0.05$. The complete statistical analysis of the data was done in the statistical computer program PASW Statistics, version 18 (IBM Corporation, Armonk, New York).

Results

The study included data provided from 50 patients with CP treated in our hospital. Patients were divided into two groups: the conservatively treated group – CT (25 patients) and the surgically treated group – ST (25 patients). The demographic and clinical characteristics of patients within the two groups are shown in Table 1.

There was no significant difference between groups regarding the demographic characteristics and risk factors, as well as regarding the clinical symptoms (pain, loss of appetite, appearance of stool, and weight loss). Pain was the dominant symptom in 41 (82%) patients of both groups.

The complete data on surgical procedures are presented in Table 2.

All patients completed a 30-min EQ-5D-5L Questionnaire. There was a statistically significant difference between patient groups in all dimensions of the EQ-5D-5L Questionnaire (Table 3).

The EQ-5D-5L Questionnaire showed better results in the ST group. There were no patients with level 5 disturbances of the QoL. Severe problems were present in 9 patients in the CT group, while in the ST group, there were no patients who reported moderate problems (except the one with moderate Depression/Anxiety).

A significant difference was found between groups in all five dimensions (Mobility, Self-care, Usual activities,

Table 1

Demographic characteristics, risk factors, and clinical symptoms in patients with chronic pancreatitis

Parameters	Surgically treated	Conservatively treated	*p*-values
Age (years), mean ± SD	48.56 ± 11.91	51.08 ± 11.61	0.452#
Sex (male/female), n	18/7	22/3	0.289*
Alcohol consumption, n	13	17	0.386#
Smoking, n	17	19	0.753#
Pain, n	23	18	0.141*
Loss of appetite, n	9	14	0.256*
Appearance of stool changed, n	7	10	0.593#
Weight loss, n	12	12	1.000*

SD – standard deviation; n – number of patients.
***χ^2 test; #Mann-Whitney *U* test.**

Table 2

Surgical procedures performed

Parameter	Patients (n = 25) n (%)
Type of surgery	
drainage	11 (44)
resection	5 (20)
combined	8 (32)
neurolysis	1 (4)
Procedure	
celiacolysis	2 (8)
distal resection and splenectomy	3 (12)
Fray and Berger	8 (32)
Partington-Rochelle	3 (12)
Roux	8 (32)
PPPD (pylorus-preserving pancreaticoduodenectomy)	1 (4)

n (%) – number (percentage) of patients.

Table 3

EQ-5D-5L distribution by groups

Parameter	Mobility, n (%)	Self-care, n (%)	Usual activities, n (%)	Pain/Discomfort, n (%)	Anxiety/Depression, n (%)
Level 1					
CT	8 (32)	16 (64)	15 (60)	1 (4)	4 (16)
ST	24 (96)	25 (100)	24 (96)	12 (48)	14 (56)
Level 2					
CT	13 (52)	7 (28)	7 (28)	13 (52)	10 (40)
ST	1 (4)	-	1 (4)	13 (52)	10 (40)
Level 3					
CT	2 (8)	2 (8)	-	9 (36)	9 (36)
ST	-	-	-	-	1 (4)
Level 4					
CT	2 (8)	-	3 (12)	2 (8)	2 (8)
ST	-	-	-	-	
Level 5					
CT	-	-	-	-	-
ST		-	-	-	-
p-value*	< 0.001	0.004	0.008	< 0.001	0.003*

CT – conservative treatment; ST – surgical treatment; EQ-5D-5L – Euro Quality of Life 5 Dimension-5 Level Questionnaire; Level 1 – no problems; Level 2 – mild problems; Level 3 – moderate problems; Level 4 – severe problems; Level 5 – extreme problems.
***χ^2-test.**

Pain/Discomfort, and Anxiety/Depression). Based on the EQ-5D-5L Questionnaire, pain and mobility were significantly better in the ST group than in the CT group ($p < 0.001$). The most notable difference between groups was noted in pain ($p < 0.001$). Surgically treated patients seldom had problems regarding mobility, self-care, and performing usual daily activities.

Pain measured by VAS showed a statistically significant difference ($p < 0.001$) in relation to good or poor health at the time of completing the questionnaire (Figure 1).

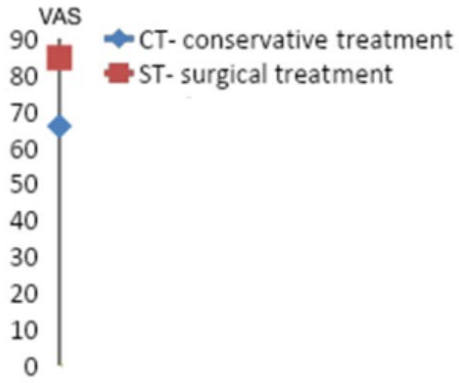


Fig. 1 – Visual Analogue Scale (VAS) on the day of completing the questionnaire marked from 0 to 100 (Independent samples *t*-test).

Discussion

This is the first study to evaluate QoL in patients with CP using a short form general questionnaire – EQ-5D-5L, an easy to perform and not a time-consuming questionnaire, providing an adequate sense of the actual QoL of these (sometimes demanding) patients.

Statistically significant differences were found between surgically and conservatively treated patients in all five dimensions of the Questionnaire, regardless of the type of surgical intervention.

Instruments for measuring the QoL and pain intensity include the European Organization for Research and Treatment of Cancer Quality Life Questionnaire Core 30 (EORTC QLQ-C30), Gastrointestinal Symptom Rating Scale, Short-Form McGill Pain Questionnaire (SF MPQ), QLQ-PAN26, PROMIS inventories for pain interference, depression, and anxiety, Visual analog scale (VAS), and Izbicki score. These belong to general and pancreatitis-specific inventories, and some are demanding to complete [26, 27]. Recently, major studies implemented SF12, which was later revised to version 2, and SF8 was also developed [27–35]. Patients with CP are usually not in the mood to complete questionnaires, especially when without symptoms; therefore, we aimed to evaluate our outcomes using EQ-5D-5L Questionnaire as the simplest but sufficient tool for the QoL assessment [25]. This allowed the evaluation of even the most demanding patients.

The results of North American Pancreatitis Study 2 (NAPS-2) show that CP reduces QoL, with a significant impact on mental and physical health. Pain intensity and metabolic changes in patients with CP are determining factors in the QoL [12, 15, 26]. Our study confirmed the significance of pain, as well as anxiety, and/or depression for the QoL. In the majority of the patients, these symptoms resolved after the surgery, while in the CT group, the majority of the patients remained with at least slight disturbance in all but the self-care dimension.

Just over half (52%) of CT patients reported slight mobility problems, while there were 8 patients (32%) with no problems and 8% of patients who reported moderate and severe disturbances each. This is probably in relation to the pain presence. No previous studies on CP patients reported results on mobility impairment as a separate aspect of QoL; it is usually assessed within the home/work performance.

The comparison of these in the most commonly used SF36 questionnaire appears inappropriate, as this performance was more pronounced due to the psychological impairment rather than the physical. Another component that might be considered is energy, which was not found to be significantly improved with surgery in other studies [33].

The majority of both ST and CT patients preserved their self-care abilities with no problems (41 out of 50). There were, however, 9 patients –7 with slight and 2 with moderate disturbances, all within the CT group. Although this difference was not statistically significant in our 50-patient study, previous studies reported significant improvements within this component [29–33].

The results regarding the usual activities are similar – 3 patients remained with severe limitations in the performance of the usual activities within the CT group. The results are also in order with the previous studies reporting the significant improvement in usual activities performance [30–33].

Pain and/or discomfort remained present in a slight form in a little over half (52%) of the operated patients, while all but one patient in the CT group remained in pain (2 severe). The remaining slight pain had no impact on the functional performance of ST patients. Although previous studies showed significant improvement in pain as the most notable effect of the surgery, the majority of surgical procedures are aimed at pain treatment [28–33, 35]. Some studies separated the pain entity into general and pancreatic due to the specificity of the questionnaire [29, 32]. This pancreatic pain was found to influence all other components of the SF36 inventory [34].

Although the main focus of the QoL assessment in CP remains on the physical health and physical functional outcome, mental status is also a significant (but smaller) factor in the overall QoL. In the ST group, we achieved complete symptom resolution in 56% of the patients, while the slight and moderate disturbances were present in 40% and 4% of the patients, respectively. Previous studies have found that the mental component is also significantly influenced by the comorbidity status; moreover, it remained significant even after correction for confounding factors [12, 34].

When considering patients who underwent Fray's procedure in CP treatment, there was pain relief and thus an improvement in QoL in 70% to 80% of cases [28]. Compared to other traditional surgical techniques, the Frey procedure with additional pancreatic head resection offers advantages regarding a long-term pain-free state and low risk for developing complications after the surgical treatment. Therefore, this procedure can be recommended as a standard method of surgical treatment of CP [30]. Additionally, there are several modifications of the Fray procedures, such as the Berne, Izbicki, and Imaizumi, which have been used successfully to improve the QoL of CP patients [28, 31, 35]. A study of 100 patients with CP, surgically treated using the Bern procedure, showed a low postoperative mortality rate (1%) and a low postoperative complications rate (16%) [23]. In a sample of patients, 55% had lower pain, and 67% had increased body weight postoperatively. The results of CP treatment using the Berne procedure were thus deemed excellent [35]. The QoL of patients after the surgical procedure is better than the QoL of patients with CP who receive only the conservative treatment in our study regardless of the procedure; however, the majority of our patients received the Frey procedure.

The limitations of this study include the relatively small group of patients, the fact it was a single-center raising concerns for bias, and that no standardized surgical procedure was performed, probably compromising the surgical treatment results.

Further studies, preferably randomized controlled trials in larger groups of patients, are needed to confirm the value of the EQ-5D-5L Questionnaire in assessing the QoL in patients with CP and to compare the results with other inventories. Furthermore, a standardized surgical approach is mandatory before conducting the trial.

Conclusion

The EQ-5D-5L Questionnaire appears easy to perform, not time-consuming, and provides insight into the patient's real-life performance, therefore being accessible to the most inapproachable patients.

Surgical treatment in patients with CP significantly improves patient's functional outcome in terms of mobility, self-care, and usual activities, compared with CT patients. Although there is no consensus nor relevant guidelines for the adequate assessment of QoL in patients with CP, the EQ-5D-5L Questionnaire may be a useful tool for the initial evaluation of these patients and subsequent assessment of treatment performance.

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