



Short-Term Quality of Life after Cytoreductive Surgery and Hyperthermic Intraperitoneal Chemotherapy

Sitoredüktif Cerrahi ile Intraperitoneal Sıcak Kemoterapinin Erken Dönem Yaşam Kalitesi Üzerine Etkisi

Özgül Düzgün¹ , İnanç Şamil Sarıcı² , Serkan Gökçay³

Abstract / Öz

Introduction: In recent years, cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) are being performed at an increasing frequency in many advanced centers of our country. The short-term quality of life (QoL) after CRS+HIPEC was investigated in the Turkish population. The purpose of our study was to investigate the QoL in patients operated for peritoneal carcinomatosis (PC).

Methods: Data collected retrospectively from 42 consecutive patients who had undergone CRS+HIPEC and 92 abdominal malignancy patients after an oncological surgery without CRS+HIPEC between 2012 and 2015 were selected in the study. The Turkish version of the European Organization for Research and Treatment of Cancer (EORTC) questionnaire (QLQ-C30) was used at 6 months after surgery for QoL assessment. Statistical analysis was performed using one sample t-test and a p value <0.05 was accepted as statistically significant.

Results: A total of 42 CRS+HIPEC patients were analyzed, of which 30 (71.4 %) were females and 12 (28.5 %) were males. The median age was 52 years (range, 22-69). CRS+HIPEC were performed for colorectal carcinoma in 15 patients (35.7 %), ovarian cancer in 12 patients (28.5%), gastric cancer in 6 patients (14.2%), pseudomyxoma peritonei in 3 patients (7.1%), sarcoma in 3 patients (7.1%), and mesenchymal tumor in 3 patients (7.1%). The median intraoperative peritoneal carcinomatosis index (PCI) score was 15 (range, 6-29), while the completeness of cytoreductive score (CCS) was 0 and 1. The median follow-up period for all patients was 12 months (range, 6-22). Functional and symptom scores were equal between CRS+HIPEC and without CRS+HIPEC cancer patients (p>0.05).

Conclusion: The short-term QoL after CRS+HIPEC patients and without CRS+HIPEC oncologic patients are found to be similar in the Turkish population.

Keywords: Cytoreductive surgery (CRS), Hyperthermic intraperitoneal chemotherapy (HIPEC), Turkish population, Quality of life (QoL)

Amaç: Sitoredüktif cerrahi (SRC) ile birlikte hipertermik intraperitoneal sıcak kemoterapi (HIPEC) ülkemizde ileri merkezlerde son yıllarda giderek artan sıklıkla yapılmaktadır. Çalışmamızın amacı peritoneal karzinomatosis (PK) teşhisiyle ameliyat edilen hastaların hayat kalitesi (QoL) değerlendirmektir.

Yöntemler: Çalışmamızda 2012-2015 yılları arasında PK tanısıyla SRC+HIPEC yapılan 42 hastanın ameliyat sonrası hayat kaliteleri ile SRC+HIPEC olmaksızın onkolojik cerrahi sonrası takip edilen 92 hastanın hayat kaliteleri karşılaştırıldı. Avrupa Kanseri Araştırma ve Tedavi Organizasyonu (EORTC) tarafından hazırlanan QLQ-C30 soruları tüm hastalarımıza ameliyat sonrası 6. ayda uygulandı ve her iki grup karşılaştırıldı. İstatistiksel analiz one sample t-test ile yapılarak, p<0.05 anlamlı kabul edildi.

Bulgular: 42 hastanın 30'u(%71.4) bayan, 12'si (% 28.5) erkek idi. Hastaların yaş ortalaması 52 (range, 69-22) idi. PK orijinleri 15hastada (%35.7) kolorektal malignite, 12hastada (%28.5) over kanseri, 6hastada (%14.2) mide malignitesi, 3hastada (%7.1) pseudomiksoma peritonei, 3hastada (%7.1) sarkom ve 3hastada (%7.1) da mezenkimal tümör olarak bulundu. Ortalama intraoperatif peritoneal karzinomatöz indeksi (PCI) 15 (range 6-29) olarak bulundu. Rezeksiyon tamlik skoru (CCS) 0 ve 1 olarak bulundu. Tüm hastalarda ortalama takip süresi 12 ay (range 2-26) idi. Her iki grup arasında fonksiyonel ve semptom skorları açısından istatistiksel fark saptanmadı (p>0.05).

Sonuç: SRC+HIPEC olmaksızın onkolojik cerrahi yapılan hastalar ile karşılaştırıldığında,PK sebebiyle SRC+HIPEC yapılan olguların kısa dönemde yaşam kalitelerinin (QoL) benzer olduğu bulunmuştur.

Anahtar Kelimeler: Sitoredüktif cerrahi (CRS), Hipertermik intraperitoneal kemoterapi (HIPEC), Turkish population, Yaşam kalitesi (QoL)

Introduction

Peritoneal carcinomatosis (PC), which is called the advanced stage of abdominal cancer, continues to be a concern that has not been completely resolved in the present time. Due to both medical cost burdens and inferior treatment results of oncologic diseases with palliative chemo-radiotherapy or supportive care in advance, in 1989 Sugarbaker et al. (1) presented cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) as a remarkable method for appropriate patients with PC. Initially, this technique had excessive treatment-related morbidity and mortality as a major concern. However, completion of the learning curve in the experienced centers resulted an overall decrease in the postoperative morbidity and mortality, as shown in the recent studies (2, 3).

Regardless of enhanced survival with admissible morbidity and mortality of surgery, quality of life (QoL) of patients with PC is still controversial. Due to broad resection and possible chemotherapy toxicity, changes in QoL of patients with CRS+HIPEC could be more than a simple surgery.

These studies were performed in the Western and Asian population; nevertheless, the techniques have not been applied in the Turkish population. Thus, in the present study, we aimed to share

ORCID IDs of the authors: Ö.D. 0000-0001-7214-2276;
İ.Ş.S. 0000-0002-2292-1279; S.G. 0000-0003-3719-3224

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¹Department of Surgical Oncology, Çukurova University School of Medicine, Adana, Turkey
²Clinic of General Surgery, Kanuni Sultan Süleyman Training and Research Hospital, Istanbul, Turkey
³Department of Medical Oncology, Çukurova University School of Medicine, Adana, Turkey

Address for Correspondence/Yazışma Adresi:
İnanç Şamil Sarıcı, E-mail:issarici2015@gmail.com

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the QoL results of the PC patients with CRS+HIPEC compared to the oncologic patients operated only without CRS+HIPEC.

Methods

Data collected retrospectively from 42 PC patients who had undergone CRS+HIPEC in Çukurova University Medical Faculty, Department of Surgical Oncology Unit between December 2012 and May 2015 were analyzed. Preoperative evaluation was made with thoraco-abdominal computerized tomography (CT) and positron emission tomography (PET)-CT. Patients were chosen as candidates for CRS+HIPEC in a multidisciplinary oncology meeting aiming a complete cytoreduction. For comparison, 92 abdominal malignancy patients after oncological surgery without CRS+HIPEC were randomly selected in our oncology clinic. This study was approved by the Institutional Review Board of the Çukurova University (CUM 2015-48-28) and informed consent was obtained from each patient.

Intraoperative tumor spreading was evaluated by the PC index (PCI) (4). Residual tumor presence after cytoreduction was re-evaluated with residual completeness scoring (CCS) (5). Mitomycin C and cisplatin were used according to the primary origin of the tumor. Chemotherapeutic drug selection and preparation were performed by the clinical oncology experts. After CRS, four intrabdominal drainage catheters were inserted into the abdomen, and HIPEC was administered for 60 minutes (range, 30-60).

The Turkish form of the European Organization for Research and Treatment of Cancer (EORTC) QLQ-C30, which was confirmed previously by Hoopman et al. (6) was selected for QoL (6). All questionnaires were administered by clinical oncologists. Functional measurement (physical, role, cognitive, emotional, and social), symptom degree (fatigue, pain, dyspnea, loss of appetite, sleeping, diarrhea, constipation, nausea or vomiting, and financial problems), and global health status were measured in all patients. Scores ranged between 0 and 100 (7).

Statistical analyses were performed using the Statistical Package for Social Sciences program 15.0 for Windows (SPSS Inc.; Chicago, IL, USA). The mean QoL scores were calculated in both groups and compared by using one-sample t-test. P values <0.05 were considered statistically significant.

Results

Forty-two patients who underwent CRS+HIPEC were compared with 92 oncologic patients operated without CRS+HIPEC. Of the 42 patients with PC, 30 (71.4%) were females and 12 (28.5%) were males. The median age was 52 years (range, 22-69). No significant difference was observed in the demographics of the two groups (Table 1).

CRS+HIPEC were performed for colorectal carcinoma in 15 patients (35.7%), ovarian cancer in 12 patients (28.5%), gastric cancer in 6 patients (14.2%), pseudomyxoma peritonei in 3 patients (7.1%), sarcoma in 3 patients (7.1%), and mesenchymal tumor in 3 patients (7.1%). The median intraoperative peritoneal carcinomatosis index (PCI) score was 15 (range, 6-29), while the completeness of cytoreductive score (CCS) was 0 and 1. The median follow-up period for all patients was 12 months (range, 6-22). Functional

and symptom scores were equal between CRS+HIPEC and without CRS+HIPEC cancer patients ($p>0.05$). The Eastern Cooperative Oncology Group (ECOG) performance status of all patients was 0 or 1.

The without PC group included colorectal carcinoma in 44 patients (47.8%), ovarian cancer in 30 patients (32.6%), gastric carcinoma in 15 patients (16.3%), and sarcomas in 3 patients (3.2%).

The median duration of operation for CRS+HIPEC was 480 minutes (range, 310-565) and that for without CRS+HIPEC group was 110 minutes (range, 80-160; $p<0.001$). The median PCI was 15 (range, 6-29). There were 39 patients with CCS 0 and 3 patients with CCS 1. The median admission in intensive care unit (ICU) was 1 day (range, 0-12). Median length of hospital stay was 13 days (range, 7-28).

The EORTC QLQ-C30 scores of patients after CRS+HIPEC compared to those without CRS+HIPEC are demonstrated in Table 2. There were no differences between the groups of EORTC QLQ-C30 scores.

Discussion

CRS+HIPEC enhanced survival of patients with peritoneal dissemination of cancer (1-3). Despite improved survival and admissible morbidity and mortality of the surgery, QoL for the patients undergoing CRS+HIPEC is still controversial. Despite many articles that

Table 1. Demographics, comorbidity, and the primary tumor of patients

Variables	CRS+HIPEC patients N=42	Oncology patients operated without CRS+HIPEC N=92
Gender (M/F)	42(12/30)	92 (31/61)
Age (years)	52 (22-69)	58(25-72)
BMI (kg/m ²)	21.1±4.2	22.2±3.5
Education N (%)		
Primary	4 (9.5 %)	8 (8.7 %)
High School	12 (28.5%)	27 (29.3 %)
University	26 (62 %)	52 (56.5 %)
Comorbidities (N)		
Hypertension	12	14
Diabetes mellitus	7	17
Asthma	3	5
Cardiovascular disease	1	6
Primary tumor (N, [%])		
Colorectal	15(35.7%)	44(47.8%)
Ovarian	12(28.5%)	30(32.6%)
Gastric	6(14.2%)	15 (16.3 %)
Pseudomyxoma peritonei	3 (7.2 %)	-
Sarcoma	3 (7.2 %)	3 (3.2 %)
Mesenchymal tumor	3 (7.2 %)	-

*CRS: Cytoreductive surgery; HIPEC: Hyperthermic intraperitoneal chemotherapy; BMI: Body mass index; M: male; F: female

describe QoL scoring calculated for patients with CRS+HIPEC, there is no information about these scores in Turkish PC patients. To our knowledge, this is the first study from a Turkish university hospital referral oncology unit that assesses QoL outcomes for patients who had undergone CRS+HIPEC.

Recent publications in literature about EORTC QLQ C-30 have assessed the QoL of PC patients. Schmidt et al. (8) evaluated the QoL of patients who underwent CRS combined with HIPEC and found that QoL is associated with an increased morbidity and mortality according to the difficulty of surgery. In contrast, in the study by Alves et al. (9), EORTC QLQ C-30 questionnaire was applied to PC patients who had undergone CRS+HIPEC, and an improvement was noted in the QoL at 1 year following the procedure. Furthermore, Tan et al. (10) compared CRS+HIPEC patients with their cancer-free patients. In addition, cognitive functioning scores and fatigue scores were better in the CRS+HIPEC patients.

In the present study, the Turkish version of EORTC QLQ C-30 was evaluated between PC patients with CRS +HIPEC and patients without CRS+HIPEC at 6 months after surgery, and no significant difference was found between two groups. However, our study has some limitations. The first is the retrospective design. Lack of the patients' basic QoL scores for reference values after CRS+HIPEC is the second limitation. The third limitation is the variety of primary cancer origins. Compared to the population of oncology patients operated without CRS+HIPEC in our center, those who underwent CRS+HIPEC had similar scores in global health, physical functioning, emotional functioning, and social functioning.

Table 2. Comparison of EORTC QLQ C-30 scores in patients with CRS+HIPEC and oncology patients operated without CRS+HIPEC

EORTC QLQ-C30 parameters	CRS+HIPEC patients (N=42)	Oncology patients operated without CRS+HIPEC (N=92)	p
Physical functioning	78(70-87)	84 (75-90)	0.524
Role functioning	81(76-91)	85 (79-93)	0.406
Cognitive functioning	82(75-88)	84 (73-90)	0.555
Emotional functioning	82(75-88)	84 (73-90)	0.555
Social functioning	81(75-90)	82 (75-90)	0.465
Global QoL	65(57-79)	68 (55-82)	0.343
Fatigue	14(10-22)	16 (11-25)	0.245
Pain	15(6-24)	16 (7-25)	0.324
Nausea and vomiting	8(2-15)	9 (1-17)	0.405
Dyspnea	10(3-17)	9 (2-17)	0.325
Insomnia	19(8-28)	17 (8-26)	0.308
Appetite loss	10(2-18)	9 (3-17)	0.243
Constipation	15(6-22)	13 (5-21)	0.543
Diarrhea	9 (3-15)	8(2-17)	0.550
Financial problems	23(11-35)	24 (11-37)	0.605

*CRS: Cytoreductive surgery; HIPEC: Hyperthermic intraperitoneal chemotherapy; EORTC QLQ-C30: European Organization for Research and Treatment of Cancer Quality of life; QoL: quality of life

Developing hospital care, advances in ICU for postoperative patient care, and a significant increase in the numbers of specialized oncology units in private sector as well as in the state hospitals can be the reason of no difference of QoL. However, successful tumor-free surgery, lack of serious morbidity, adequate enteral nutrition, achievement of longer disease-free survival, and rapid return to normalcy of the oncology patients are important factors affecting QoL. This is likely due to the fact that many patients after cancer surgery in Turkey start on chemotherapy, and the rapid return to their normal economic, social, and physical lives can be explained by the improved scores in both the CRS+HIPEC and without CRS+HIPEC groups.

Conclusion

Short-term QoL after CRS+HIPEC and oncology patients operated without CRS+HIPEC seems to be equal in our Turkish population.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Çukurova University (2015/48-20).

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