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Özgül Düzgün*, Fatma Kulalı**, Ceren Canbey Göret***, Gülçiçek Ayrancı****, Fikret Ezberci*, Ömer Faruk Özkan*

*Department of General Surgery, Health Sciences University, Umraniye Research and Education Hospital, Istanbul, Turkey
**Department of Radiology, Health Sciences University, Umraniye Research and Education Hospital, Istanbul, Turkey
***Department of Surgical Pathology, Health Sciences University, Sancaktepe Research and Education Hospital, Istanbul, Turkey
****Department of Surgical Pathology, Health Sciences University, Umraniye Research and Education Hospital, Istanbul, Turkey

Synchronous pancreas and liver resection during CRS ± HIPEC. Results of 35 consecutive patients

AIM: *To evaluate the results of synchronous pancreas and liver resection in patients with metastatic carcinoma accompanied by peritoneal carcinomatosis (PC) who underwent cytoreductive surgery (CRS)/hyperthermic intraperitoneal chemotherapy (HIPEC).*
MATERIAL AND METHODS*: Overall, 35 patients with PC who underwent CRS/HIPEC at Umraniye Education and Research Hospital owing to different etiological causes were evaluated for operation procedure, age, sex, comorbid diseases, ASA score, systemic chemo/radiotherapy, duration of surgery, chemotherapy (CT) protocol applied in HIPEC, amount of bleeding, synchronous hepatobiliary resection interventions during operation and short/long-term mortality and morbidity.*
RESULTS: *Fifteen patients were male and 20 were female. Mean age was 58.375 ± 13.02 (range, 27–85) years. CRS/HIPEC was performed in 12 patients (34.3%), whereas only CRS was performed in 23 (65.7%) patients. The lowest and highest perioperative bleeding amount was 50 cc and 2000 cc, respectively, and 6 (17.1%) patients had intraoperative bleeding of ≥1000 cc. Synchronous isolated pancreatic resection, hepatic + pancreatic resection and isolated liver resection was performed in 3 (8.6%), 5 (14.3%) and 27 (77.1%) patients treated with CRS/HIPEC. Two patients died within postoperative day 30, and the mortality rate was 5.7%.*
CONCLUSION: *Hepatopancreatobiliary surgery is a difficult intervention and is associated with serious morbidities. Synchronisation of hepatopancreatobiliary surgery with CRS/HIPEC may be challenging for the surgeon and clinician. Here we emphasise that this combination can be performed safely by an experienced team with a multidisciplinary approach and good patient preparation.*

KEY WORDS: Cytoreductive surgery, HIPEC, Hepatopancreatobiliary surgery, Peritoneal carcinomatosis

Introduction

Peritoneal carcinomatosis (PC) is a fatal condition characterised by advanced stage gastrointestinal or gynaecological carcinoma spreading to the peritoneum. Although most of these cases have been considered to be inoperable in the past, new treatment modalities, particularly cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC), can now be used to achieve positive results in terms of survival [1].
CRS aims to macroscopically remove the tumour and eradicate the tumour at microscopic sizes using a chemotherapy solution at 42°C-43°C by supporting this procedure with HIPEC. HIPEC has advantages, such as it locally provides a high rate of chemotherapy in the peri-

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Correspondence to: Ceren Canbey Goret, MD, Health Sciences University, Sancaktepe Research and Education Hospital, Department of Surgical Pathology, Floor 0, Istanbul, Turkey(e -mail: derencanbey@hotmail.com)

toneal region and does not have many systemic side effects [2-4].

Studies with a large number of cases of CRS/HIPEC reported the morbidity and mortality rates of approximately 10%–50% and 0.5%–6%, respectively [5-7]. A study conducted in 2003 with 105 patients with colorectal carcinoma and PC showed that there were significant survival benefits in cases where CRS/HIPEC treatment modality was administered [8]. Moreover, many independent morbidity factors, such as the number of resected organs, prolonged duration of surgery, prevalence of metastatic foci, number of organs removed and general condition of the patient, have been described [5,9-11]. However, the effect of simultaneous hepatopancreatobiliary system (such as liver segmentectomy/lobectomy and pancreatectomy) operations and CRS/HIPEC has been reported in a limited number of studies [12-14]. The duration of surgery is known to be prolonged when CRS/HIPEC is performed.

In the present study, we evaluated the treatment status of CRS/HIPEC in patients with colorectal, gynaecological, breast and hepatopancreatobiliary system carcinomas accompanied by PC as well as the morbidity and early and late mortality rates in patients who underwent pancreatic resection and liver metastasectomy/segmentectomy/lobectomy simultaneously.

Table I - *Evaluation of Peritoneal carsinomatos index (PCI)*

Regions of the abdomen	Lesion size
0 Central	
1 Right upper	
2 Epigastrium	
3 Left upper	No tumor seen: Score 0
4 Left flank	
5 Lower left	Tumor up to 0.5 cm: Score 1
6 Pelvis	
7 Right lower	Tumor up to 5 cm: Score 2
8 Right flank	
9 Upper jejenum	Tumor > 5 cm or confluence: Score 3
10 Lower jejenum	
11 Upper ileum	
12 Lower ileum	

*Total Number of Regions: 13, Maximum PCI score: 39

Table II - *Evaluation of completeness of the cancer resection (CC)*

CC-1	No macroscopic residual cancer remaining
CC-2	No residual nodule >2.5 mm
CC-3	Residual nodules >2.5 mm in the greatest dimension

Material and Methods

In total, 35 patients with colorectal, gynaecological, breast and hepatopancreatobiliary system carcinomas treated with CRS/HIPEC and operated at Umraniye ERH during August 2017–November 2018 were retrospectively analysed using patient-specific data prospectively collected by a patient follow-up software. All patients were evaluated in terms of operation procedure, age, sex, comorbid disease, ASA score, accompanying systemic chemo/radiotherapy, duration of surgery, CT protocol applied in HIPEC, occurrence of complications, amount of intraoperative bleeding (in cc), pathological stages and resected organs. Patients with missing data were excluded from the study. Data analysis was performed using Windows and Microsoft Excel 2016.

CRS, hepatic resection and pancreatic resection procedure: A 10-mm camera was used to perform intraabdominal peritoneal carcinomatous index (PCI) scoring. All regions were examined and scored according to the PCI system. The omentum, pelvis and diaphragm were evaluated. Peritoneal washing and cytology were performed. PCI is a score determined during abdominal exploration, which determines the estimated likelihood of complete cytoreduction, and was assessed as shown in the table [12] (Table I). The possibility of performing peritonectomy was evaluated by completeness of the cancer resection (CC) score. CC score refers to residual macroscopic tumour that cannot be removed during operation. A CC score of 0 indicates that the whole tumour was macroscopically removed, a CC score of 1 indicates absence of tumour larger than 2.5 mm, a CC score of 2 indicates macroscopic tumour residues of 2.5 mm to 2.5 cm [9] (Table II). Subsequently, an incision was made from the xiphoid to the pubis. Extraperitoneal dissection was initiated without opening the peritoneum. It was advanced up to the transversus abdominis. Retroperitoneum was rotated, parietal peritoneum was followed from the upper abdomen to the lower abdomen, and the peritoneum was removed from the entire lateral wall. Omentectomy was performed. Both told fascias were opened, and both ureters were followed up to the bladder entrance. Pelvic peritoneum was peeled. Tumoural tissues and infiltrating organs in the pelvic area were removed. Pelvic lymph dissection was performed. All tumour areas and infiltrating colonic loops were removed while preserving the small intestine. The circumference of the splenic artery over the pancreas and the gerota fascia were included in the piece. If the pancreas was involved, the splenic artery was tied from the celiac truncus root line and the splenic vein was tied at an appropriate distance. Hepatoduodenal ligament was revealed, and hanging tape was placed for pringle manoeuvre. The hepatoduodenal ligament was revealed to the liver hilum and dissected from the lymph nodes. Liver was mobilised. Retrohepatic cava was revealed. Falciform ligament and teres hepatis were dissected. Diaphragm was excised using a ball-tip cautery. The vagi were protected to avoid gastric atony. If gastric stasis

was suspected, pyloroplasty was performed. All mesenteric visceral peritones were peeled. Anastomoses were performed.

Hipec Procedure

After the CRS was completed and bleeding was checked, two inflow and two outflow drains were placed and the abdomen was closed with no 1 loop pds and skin stapler and sutures. Colorectal tumours were treated with oxaliplatin (OXA) 300 mg/m^2 (body surface area, BSA) in 5% dextrose intraperitoneally and 5-fluorouracil (5FU) 400 mg/m^2 BSA + leukovorin (LOK) 20 mg/m^2 BSA intravenously at 42°C-43°C for 30 min. Patients with ovarian, sarcomatosis, mesothelioma and gastric carcinoma were intraperitoneally treated with cisplatin (CIS) 75 mg/m^2 BSA + doxorubicin (DOXO) 15 mg/m^2 BSA in 9 NaCl solution (Belmont Hyperthermia Pump; Belmont Instrument Corporation, Billerica, MA, USA).

Results

Of a total of 35 patients, 15 were male and 20 were female. Mean age was 58.375 ± 13.02 years (range, 27–85). In terms of ASA score, 17 (48.6%) patients were ASA 1, 6 (17.1%) patients were ASA 2, 11 (31.4%) patients were ASA 3 and 1 (2.9%) patient was ASA 4. Of the 35 patients, 15 (42.8%) were diagnosed with colon carcinoma + PC, 5 (14.3%) with ovarian Ca + PC, 4 (11.4%) with rectum ca + PC, 4 (11.4%) with gastric ca + PC, 3 (8.6%) with sarcomatosis, 2 (5.7%) with breast ca + PC, 1 (2.9%) with gastric ca and 1 (2.9%) with pancreatic ca + PC (Table III).

Thirteen (37.1%) patients were deemed unsuitable for additional chemo/radiotherapy by the council after the evaluation of their general condition. Of the 22 (62.9%) patients who received additional chemo/radiotherapy, 9 (25.7%) were diagnosed with colon carcinoma + PC, 3 (8.6%) with ovarian ca + PC, 3 (8.6%) with rectum ca + PC, 3 (8.6%) with gastric ca + PC, 2 (5.7%) with sarcomatosis and 2 (5.7%) with breast ca + PC.

16 (45.7%) patients had no comorbid disease. Of the 19 (54.3%) patients with comorbid diseases, 4 (11.4%) had diabetes mellitus (DM), 2 (5.7%) had chronic obstructive pulmonary disease (COPD), 2 (5.7%) had HT + DM + CHF, 1 (2.9%) had hypertension (HT), 1 (2.9%) had Celiac disease, 1 (2.9%) had acute renal failure, 1 (2.9%) had asthma + HT, 1 (2.9%) had congestive heart failure (CHF), 1 (2.9%) had HT + DM + goitre + anaemia, 1 (2.9%) had CHF + DM + HT + ASTHMA, 1 (2.9%) had COPD + DM + HT, 1 (2.9 %) had mitral + tricuspid insufficiency, 1 (2.9%) had HT + DM + thyroidectomy, 1 (2.9%) had prostate + bladder carcinoma + touret syndrome. There were 2 (5.7%) patients that died postoperatively. One of them (2.9%) had ARF and the other had no comorbid disease.

Regarding the amount of intraoperative bleeding, the lowest bleeding amount was 50 cc and the highest bleeding amount was 2000 cc. There were a total of 6 (17.1%) patients with bleeding of ≥1000 cc during the operation. Three of these patients (8.6%) were diagnosed with colon ca + pc, two (5.7%) with breast ca + PC and one (2.9%) with sarcomatosis. All cases were of advanced stage tumours. Two (5.7%) patients with intraoperative bleeding died postoperatively. Of them, the patient with 1200-cc bleeding was diagnosed with colon ca + PC and developed bile leakage in the posto-

Table III - *Histopathological diagnoses of our patients*

Diagnosis	n= 35 (100%)
Colon Ca + PC	15 (42.8%)
Ovary Ca + PC	5 (14.3%)
Rectum Ca + PC	4 (11.4%)
Gastric Ca + PC	4 (11.4%)
Sarcomatosis	3 (8.6%)
Breast Ca + PC	2 (5.7%)
Gastric Ca	1 (2.9%)
Pancreas Ca + PC	1 (2.9%)

*Ca: Carcinoma, PC: Peritoneal carcinomatosis

Table IV - *Patients with perioperative bleeding of 1000 cc and more*

Diagnosis	Accompanying additional disease	Bleeding Amount (cc)	Mortality	Postoperative e complications	Duration of operation (h)
Colon Ca+PC	DM	1100	Live	Sepsis + Liver failure	10
Colon Ca+PC	No	1200	Ex	Bile Leakage	10
Colon Ca+PC	COPD	1000	Live	No	10
Sarcomatosis	MI+TI	2000	Live	Abdominal hematoma	7
Breast Ca+PC	ARF	1400	Ex	No	7
Breast Ca+PC	No	1200	Live	No	14

*Ca: Carcinoma, PC: Peritoneal carcinomatosis, DM: Diabetes Mellitus, COPD: Chronic Obstructive Pulmonary Disease, MI: Mitral Insufficiency, TI: Tricuspit Insufficiency, ARF: Acute Renal Failure

TABLE V - *Patients who underwent CRS/HIPEC*

Diagnosis	HIPEC treatment protocol	Mortality	Duration of operation (h)
Rectum Ca + PC	OXA+5FU+LOK	Live	8
Colon Ca + PC	OXA+5FU+LOK	Live	9
Colon Ca + PC	OXA+5FU+LOK	Live	10
Rectum Ca + PC	OXA+5FU+LOK	Live	12
Colon Ca + PC	OXA+5FU+LOK	Live	11
Gastric Ca + PC	CIS+DOXO	Live	6.5
Colon Ca + PC	OXA+5FU+LOK	Live	6
Breast Ca + PC	CIS	Ex	7
Breast Ca + PC	CIS	Live	14
Colon Ca + PC	OXA+5FU+LOK	Live	10
Rectum Ca + PC	OXA+5FU+LOK	Live	5
Sarcomatosis	CIS+DOXO	Live	5

*Ca: Carcinoma, PC: Peritoneal carcinomatosis, CIS: Cisplatin, 5FU: 5-fluorouracil, OXA: Oxaliplatin, LOK: Leucovorin, DOXO: Doxorubicin

Fig. 2: Preperation of distal pancreas for pancreatectomy during CRS.

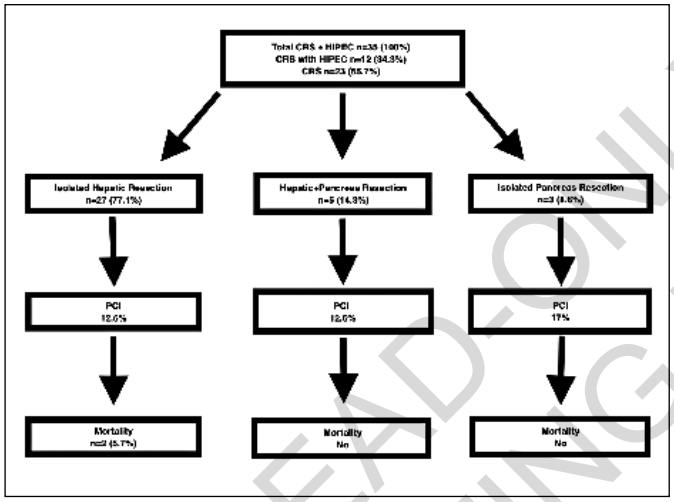

Fig. 1: Flow chart of our cases.

perative period as an additional complication. In the other patient diagnosed with breast ca + PC, the amount of bleeding during the operation was 1400 cc and no additional complication developed in the postoperative period (Table IV).

Complications developed in only eight (22.8%) patients. Of them, two (5.7%) developed diaphragmatic injury, one (2.9%) developed sepsis and liver failure, one (2.9%) developed transverse colon perforation and anastomosis leakage, one (2.9%) developed bile leakage, one (2.9%) developed bladder injury, one (2.9%) developed intraabdominal haematoma and one (2.9%) developed intraabdominal abscess.

CRS was performed on 23 of 35 patients (65.7%). One of these patients underwent a simultaneous Whipple procedure. SRC + HIPEC was performed in 12 (34.3%) patients. Of these, 8 (66.6%) were treated with OXA + 5FU + LOK (Oxaliplatin + 5-fluorouracil + Leucovorin),

TABLE VI - *Patients who underwent CRS/HIPEC and synchronous pancreatic resection*

Diagnosis	Accompanying additional disease	Pancreas resection	Liver resection	CRS ± HIPEC	Bleeding during operation (cc)	Mortality
Colon Ca + PC	DM	Head (Whipple Procedure)	Segmentectomy	CRS	1100	Live
Ovary Ca + PC	CFH, DM, HT, Asthma	Distal	Segmentectomy	CRS	800	Live
Sarcomatosis	MI, TI	Distal	No	CRS	2000	Live
Colon Ca + PC	No	Subtotal	Segmentectomy	CRS+HIPEC	200	Live
Pancreas Ca + PC	DM	Distal	No	CRS	700	Live
Sarcomatosis	Celiac Disease	Subtotal	No	CRS	400	Live
Gastric Ca	Prostate-Bladder Ca and Touret syndrome	Distal	Segmentectomy	CRS	400	Live
Gastric Ca + PC	HT	Subtotal	Lobectomy	CRS	500	Live

*Ca: Carcinoma, PC: Peritoneal carcinomatosis, CRS: Cytoreductive surgery, HIPEC: Hyperthermic intraperitoneal chemotherapy, DM: Diabetes Mellitus, MI: Mitral Insufficiency, TI: Tricuspit Insufficiency, HT: Hypertension, CHF: Congestive heart failure

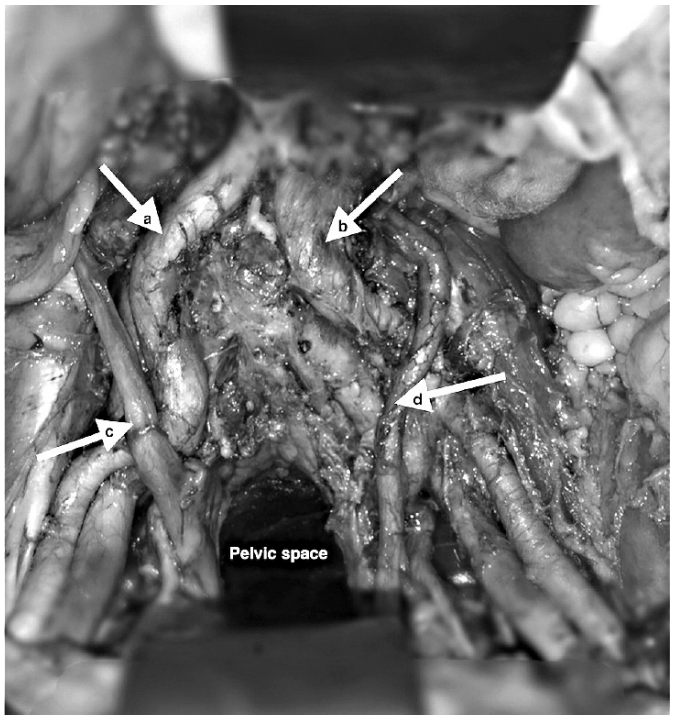

Fig. 3: Pelvic and paraaortic disection during cytoreductive surgery: A: Right common iliac artery; B: Left common iliac artery; C: Right ureter; D: Left Ureter.

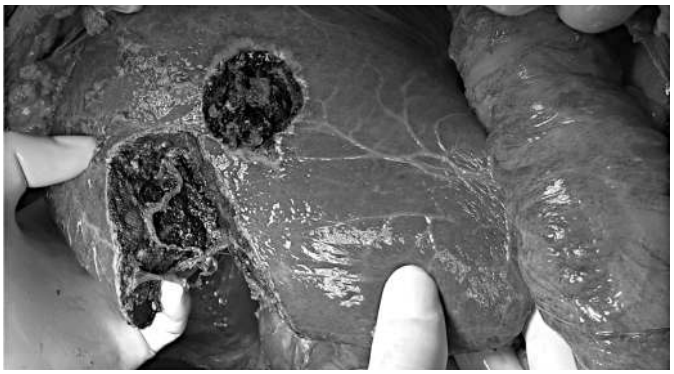

Fig. 4: Non-anatomic liver resection during CRS.

2 (16.7%) were treated with CIS + DOXO (Cisplatin + Doxorubicin), 2 (16.7%) were treated with CIS (Cisplatin) protocol. Only 1 (8.3%) patient, who underwent SRC + HIPEC, died, whereas 11 (91.7%) of our patients who underwent SRC + HIPEC were alive. Similarly, 23 (65.7%) patients underwent SRC alone and 22 of these (95.7%) were alive, whereas 1 (4.3%) patients died (Table V).

Pancreatic resection in addition to CRS/HIPEC was performed in 8 (22.8%) patients. None of these patients died. Only three of these patients had isolated pancreatic resection, whereas five (14.3%) patients underwent simultaneous liver segmentectomy/lobectomy (Fig. 1). Detailed findings of our patients are listed in Table VI (Figs. 1, 2).

Of 35 patients, CRS/HIPEC was performed in 12 (34.3%) and only CRS was performed in 23 (65.7%) patients (Figs. 3,4). Thirty-two (91.4%) patients underwent CRS/HIPEC and synchronous liver segmentectomy/lobectomy. Of them, 27 (77.1%) were isolated hepatic resection, while 5 (14.3%) were synchronous pancreas + hepatic resection. Only two (5.7%) patients who underwent isolated hepatic resection died postoperatively. One patient (colon ca + PC) who underwent CRS and one patient (breast ca + PC) who underwent CRS/HIPEC died within postoperative day 30. Mortality rate was found to be 5.7%. Detailed information about the patients who underwent liver resection is listed in Table VII.

Discussion

Today, CRS/HIPEC has become a standard practice in PC patients with poor prognosis owing to its positive results and contribution to survival. In addition to the complexity of this procedure, there is an increased risk of surgical complications in CRS [7]. In a study conducted in 2017 with 68 patients, major or minor complications were reported in 30 patients, and the complication rate was 44.1% [5]. In another study conducted in 2016 with 118 patients, major complication was reported in 52 patients, more than one major complication

TABLE VII - *Patients who underwent CRS/HIPEC and synchronous liver ± pancreatic resection*

Diagnosis	Number of cases with synchronous liver segmentectomy/hepatectomyn = 32/35(91.4%)	Mortalityn = 2(5.7%)	CRS ± HIPEC
Colon Ca + PC	n = 15 (42.8%)	Live: 14Ex: 1	CRS: 5CRS with HIPEC: 10
Ovary Ca + PC	n = 5 (14.3%)	Live: 5Ex: 0	CRS: 5CRS with HIPEC: 0
Rectum Ca + PC	n = 4 (11.4%)	Live: 4Ex: 0	CRS: 1CRS with HIPEC: 3
Gastric Ca + PC	n = 4 (11.4%)	Live: 4Ex: 0	CRS: 3CRS with HIPEC: 1
Sarcomatosis	n = 1 (2.9%)	Live: 1Ex: 0	CRS: 0CRS with HIPEC: 1
Breast Ca + PC	n = 2 (5.7%)	Live: 1Ex: 1	CRS: 0CRS with HIPEC: 2
Gastric Ca	n = 1 (2.9%)	Live: 1Ex: 0	CRS: 1CRS with HIPEC: 0

*Ca: Carcinoma, PC: Peritoneal carcinomatosis, CRS: Cytoreductive surgery, HIPEC: Hyperthermic intraperitoneal chemotherapy.

was reported in 16 of these patients and the complication rate was 44% [12]. In a study conducted in 2015 with 78 patients, 27 (34.6%) patients were reported to develop major complications [9]. This rate continues to decrease as the experience of the teams increase and new developments occur in surgical strategies.

Major and minor complication rate reported in this study (8 patients, 22.8%) was lower than that reported in the literature. Among these patients, only one patient diagnosed with colon ca + PC who underwent liver segmentectomy developed bile leakage, and this patient died within postoperative day 30. No mortality was observed in the early period in other patients.

Bleeding is a frequently occurring postoperative complication. Blood transfusion in cancer surgery is associated with increased morbidity and mortality; therefore, the control of surgical bleeding is important [15]. When we look at amounts of bleeding reported in the literature, it is seen that Glehen et al. (2010) reported this rate as 7.7%, Elias et al. (2010) as 6%, Elias et al. (2013) as 13%, Bakrin et al. (2013) as 5% and Bartlett et al. (2013) as 15.1% (17-23). In our study, only one (2.9%) patient developed haematoma in the abdomen secondary to bleeding during the postoperative period. The rate of postoperative bleeding in our patients was lower than that reported in the literature. Among our patients, the lowest amount of intraoperative bleeding was 50 cc and the highest was 2000 cc. We had a total of six (17.1%) patients with intraoperative bleeding of ≥1000 cc.

In the study by Pamela et al. with 60 patients, it was reported that 32 patients (53.3%) required fresh frozen plasma (FFP) and red blood cell transfusion was rarely used in cases of intraoperative bleeding [16]. In our study, we performed intraoperative FFP and Erythrocyte Transfusion replacement in the patients who developed bleeding.

In terms of survival, complete cytoreduction (CC0 or CC1) is a significant parameter [18,19]. CC score refers to residual macroscopic tumour that cannot be removed during the operation[9,24,25].

In the study by Kyriazanos et al. with 68 patients, it was reported that 64 (94.8%) patients were CC 0–1, 4 (5.2%) patients were CC 2 [5]. In the study by Alzahrani et al. with 78 patients, it was reported that 74 (94.9%) patients were classified as CC 0, 3 (3.8%) patients as CC 1 and 1 (1.3%) patient as CC 2 [9]. In our study, 30 patients (85.7%) were CC 0, 3 patients (8.6%) were CC 1 and 2 patients (5.7%) were CC 2.

PCI is a score determined during the exploration of abdomen and pelvis, predicting the probability of complete cytoreduction. In addition, it is used for the evaluation of survival when CRS/HIPEC is used as the treatment [26]. In some studies, if the PCI score is more than 20 and the operation time is prolonged (>550 min), it is reported that risk of pancreatic fistula increases, and this score reveals high tumour load and need for extensive CRS 1[2]. In our study, the lowest PCI score was 4 and the highest PCI score was 33 (mean: 13.02); these findings were consistent with the literature.

Because of the difficulty of the surgical procedure, certain complications are more common in CRS/HIPEC application. The main complications described in the literature are GIS leaks, fistulas and bleedings, and some studies have suggested that hepatobiliary interventions should be performed in another session.

After Sugarbaker's definition of peritonectomy perforation, the rate of complications as well as mortality decreased with the increase in experience and further development of the technique [27]. Hepatopancreatobiliary surgery with relatively high complication rates in patients treated with CRS/HIPEC shows that this procedure can be performed synchronously in recent years. There are even some carcinomatous cases undergoing intestinal transplantation in some centres [28].

In the study by Dour et al. [14] conducted with 63 PC patients treated with distal pancreatectomy and CRS/HIPEC, which is similar to our study in terms of surgical procedures and treatment modalities, the morbidity rate was reported to be 30.2%–18.8% in patients who underwent distal pancreatectomy. Similarly, high morbidity rates (approximately 10 to 50%) have been reported in patients treated with CRS/HIPEC [29-31].

In our study, pancreatic intervention was performed in eight patients, Whipple procedure was performed in one patient and distal or subtotal pancreatectomy was performed in the remaining patients. Of the eight patients, simultaneous hepatic resections were performed in five. When the entire series was evaluated, there was no complication causing serious mortality, and mortality was observed due to bile leakage causing sepsis that could not be controlled. Other causes of morbidity were extrahepatopancreaticobiliary complications, which are defined in the literature and compatible with the series, such as diaphragm injury, sepsis, liver failure, transverse colon perforation, anastomotic leak, bile leakage, haematoma and abscess [5,32,33].

Literature review using Pubmed showed a limited number of studies wherein hepatopancreatobiliary intervention was performed during CRS. Randle et al. reported a mortality rate of 2.8%-6.5% in a study of 108 patients with PC + synchronous liver metastasis (LM) with different origins who underwent CRS/HIPEC [13]. Delhorme et al. reported the mortality rate as 3% in 104 patients with colorectal carcinoma, PC + LM who underwent CRS/HIPEC with metastasectomy (LM: 77, HIPEC: 18, LM + HIPEC: 9) [12]. In a study by Schwarz et al. with 118 patients who underwent CRS/HIPEC and distal pancreatectomy, early mortality rate was approximately 6% and 90-day mortality was 8% [12].

In CRS/HIPEC patients treated in our centre for the past 3 years, simultaneous liver resection with CRS as well as liver and pancreatic intervention and isolated pancreatic intervention has been performed on the majority of 35 cases as our experience increased and experienced

hepatobiliary surgeons joined our team. When all our cases were evaluated, early mortality occurred in 2 (5.7%) patients. This rate is consistent with the literature, and the cause of mortality in one of the patients with early mortality was acute tubular necrosis and respiratory insufficiency, whereas in the other patient, the mortality was due to bile leakage and sepsis that could not be controlled. Our longest follow-up period is 16 months and we have no new cases of mortality.

In the conclusion**;** Hepatopancreatobiliary surgery is a laborious and difficult procedure for the surgeon/clinician and is associated with serious morbidities. Synchronous hepatopancreatobiliary surgery with CRS/HIPEC negatively affects the surgeon and clinician. In the cases we presented, we tried to emphasise that this can be performed safely by an experienced team with a multidisciplinary approach and good patient preparation. In addition, although the data was collected prospectively in this study, the clinical study was retrospective and we plan to conduct further prospective studies.

Riassunto

Scopo dello Studio: valutare i risultati della resezione sincrona del pancreas e del fegato in pazienti con carcinoma metastatico accompagnato da carcinosi peritoneale (PC) sottoposti a chirurgia citoriduttiva (CRS) e chemioterapia intraperitoneale ipertermica (HIPEC).

Sono stati valutati complessivamente 35 pazienti con PC sottoposti a CRS / HIPEC all'Ospedale di Educazione e Ricerca Umraniye per diverse etiologie, considerando procedura operativa, età, sesso, comorbilità, punteggio ASA, chemio / radioterapia sistemica, durata dell'intervento chirurgico, protocollo di chemioterapia (CT) applicato in HIPEC, quantità di sanguinamento, interventi di resezione epatobiliare sincrona durante la procedura e mortalità e morbilità a breve / lungo termine.

Si tratta di quindici pazienti uomini e 20 erano donne, di età media di 58.375 ± 13.02 anni (intervallo 27-85) anni. La procedura CRS / HIPEC è stata eseguito in 12 pazienti (34,3%), mentre la sola CRS è stata eseguita su 23 (65,7%) pazienti. L'entità della perdita ematica perioperatoria è stata da 50 a 2000 cc, ma in 6 pazienti (17,1%) il sanguinamento intraoperatorio è stato di ≥ 1000 cc. Una resezione pancreatica sincrona isolata, una resezione epatica + resezione pancreatica e una resezione epatica sincrona isolata è stata eseguita rispettivamente in 3 pazienti (8,6%), in 5 (14,3%) e in 27 pazienti (77,1%) tutti trattati con CRS / HIPEC. Due pazienti sono deceduti entro il 30 ° giorno postoperatorio e il tasso di mortalità è stato del 5,7%.

Conclusione: La chirurgia epatopancreabiliare è un intervento difficile ed è associata a gravi patologie. La sincronizzazione della chirurgia epatopancreatro-biliare con CRS / HIPEC può essere difficile per il chirurgo e il clinico medico. Qui si sottolinea che questa combinazione può essere eseguita in sicurezza da un team esperto con un approccio multidisciplinare e una buona preparazione del paziente.

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