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Evaluation of urgent multivisceral resections due to complications resulting from an advanced ovarian cancer

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ABSTRACT

Background: Unlike other solid tumors (i.e. pancreas, gallbladder, stomach), an ovarian cancer is responsive to a systemic treatment with platinum derivates in 80% of patients. This apparent chemosensitivity justifies a broader surgical approach. A cytoreductive, "tumor-debulking" surgery is defined as an attempt to remove in a maximum degree all visible and detectable lesions. Despite treatment, the advancement of the disease very often leads to complications defined as "surgical" and life-threatening.

Objectives: The aim was to evaluate the efficacy and safety of palliative surgery in advanced ovarian cancer implicating acute surgical diseases of the abdominal cavity.

Material and methods: Between years 2005 and 2014 were operated 118 patients with an advanced ovarian cancer (FIGO III-IV) implicating acute and directly life-threatening diseases of the abdominal cavity, involving 132 surgical operations. The causes of these operations were: obstruction of the gastrointestinal tract — 91 patients; perforation of the gastrointestinal tract — 15; gastrointestinal bleeding — 9; intussusceptions — 3.

Results: Retrospective data for the 118 patients were analyzed. Safety and the perioperative mortality rate were assessed. Serious postoperative complications were recorded in 31 patients (anastomotic stoma — 9; bleeding requiring repeated surgery —3; recurring gastrointestinal obstruction — 16; liver failure after partial hepatic resection — 3). Systemic complications in the form of respiratory failure and cardiovascular disorders requiring cardiological treatment — 21. All patients required clinical nutrition, both parenteral and enteral. Deaths recorded — 3. 39 patients were rehospitalized within 30 days of surgery. 7 deaths were recorded in this group.

Conclusions: Combining lifesaving surgery with cytoreduction allows further adjuvant treatment. Early rehospitalization occurring within less than 30 days is linked to increased mortality.

Key words: ovarian cancer, multivisceral resections

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INTRODUCTION

Knowledge about epithelial ovarian cancer (EOC) continuously widened in the last few decades. New theories and discoveries concerning its true origin and particular histological features cast light on EOC's real nature and behavior. The studies aimed to define optimal therapeutic procedures.

While many issues remain unresolved, like an optimal time to perform a primary cytoreductive surgery, the advantages resulting from administered drugs, the development of the disease's early detection or even prevention schemes, it is the value of an optimal tumor resection defined by the intensity of the minimal residual disease's relapse that enjoys a well-established position in numerous prospective and retrospective studies. We may read in these studies, that a radical resection of a tumor has a decisive prognostic significance, even in the case of unfavorable factors, such as peritoneal metastasis. While many works exist on the subject of second-

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ary surgical cytoreduction with subsequent chemotherapy, there is a lack of works about cytoreductive surgery in patients undergoing a third or fourth operation complicated by an acute disease of the abdominal cavity. There is only one analysis regarding 15 patients qualified for a quaternary cytoreductive surgery (Memorial Sloan-Kettering Cancer Center (Shih et al., 2010).) The study analyzed the results of surgical treatment and attempted to define the patients for whom such surgery is indicated. In 1983, Berek et al. introduced for the first time the term "secondary cytoreduction". According to most physicians, this is a surgical procedure performed after the completion of basic therapy and intended to reduce the mass of the tumor. This type of surgery aims to improve the patient's quality of life as a result of an elimination of symptoms due to the presence of the tumor. These are non-healing procedures and original studies concerning patients displaying a sub-optimal response to treatment showed only marginal advantages, with a median survival of 9 months [6, 22]. Thus, no proof exists at present that secondary surgery constitutes a real advantage for this population of patients. Ovarian carcinoma increasingly becomes a long-term disease and the issues concerning its treatment at a severely advanced stage involve complications in need of acute care surgery of the abdominal cavity. The usefulness of such procedure was called into question in the case of a selected group of patients, when it appeared that after the elimination of the cause of a gastrointestinal obstruction and the removal of a large and poorly vascularized tumorous mass, the patients began once again to respond well to the adjuvant treatment. A surgical justification for the elimination of the cause, like an obstruction, but also for the removal of the tumor, is a reinforcement of the immune system due to the reduction of the tumor's mass.

MATERIAL AND METHODS

118 patients operated between 2005 and 2014 because of an ovarian carcinoma implicating an acute abdominal cavity disease. Demographic data are presented in Table 1.

RESULTS

Retrospective data for 118 patients were analyzed. Safety and mortality during the perioperative period were assessed. Severe surgical postoperative complications were observed in 31 patients [anastomosis — 9; bleeding requiring new surgery — 3; recurrence of gastrointestinal obstruction — 16; pancreatitis after partial resection — 3 (Tab. 2)].

Systemic complications like respiratory failure and cardiovascular disorders requiring cardiologic treatment — 21 (Tab. 3). All patients required parenteral, as well as enteral nutrition. Were recorded 3 deaths.

39 patients were rehospitalized within 30 days of surgery. In this group were recorded 7 deaths.

Table 1. Demographic data, cause and type of performed surgery

132 operations Age 42–81 (69) indications for surgery	Treatment history	Type of acute care surgery	Parenteral nutrition	Enteral nutrition	Metastasis resection	Radicality of resection R = 0 R < 1 R > 1	Postoperative chemotherapy N — 118
Gastrointestinal obstruction (91)	Primary surgery (78) Chemotherapy (91)	Hemicolectomy P (13) Hemicolectomy L (37) Sigmoid colectomy (19) Anterior resection AR (22)	29	62	91	R > 1–91	74 patients
Gastrointestinal perforation (13)	Primary surgery (13) Chemotherapy (13)	Stomach resection BI (2) Stomach resection BII (1) Small bowel resection (10)	13	0	13	R > 1 13	10
Gastrointestinal bleeding (9)	Chemotherapy (9)	Sectional colectomy (7) Small bowel sectional resection (2)	9	0	3	R > 1 9	6
Intussusception (3)	Chemotherapy (3)	Sigmoid resection (1) Small bowel resection (2)	3	0	3	R > 1 3	3

Table 2. Postoperative complications

Duration of operation (min)	**90–125 (112)**
Perioperative blood unit transfusion	36
Transfused blood unit	
Anastomotic stoma	9
Post-operative bleeding	3
Gastrointestinal obstruction recurrence or occurrence of obstruction as primary symptom of pancreatitis	39
Pancreatitis	3
Period of hospitalization (days)	10–34 (13)
Patients requiring intensive postoperative care (days)	2

Table 3. General medical complications

	Perioperative complications	**Early postoperative complications**	**Late postoperative complications**
Respiratory		Exudates (13)	Pneumonia
		Pneumonia (8)	6
Cardiovascular		Myocardial infraction (2)	Circulatory collapse (7)
Hematological	Anemia (11)	Anemia (17)	Deep venous thrombosis (2)
Intestinal		Pancreatitis (2)	Ileus (16)
		Anastomotic dehiscence (5)	
Infections		Abdominal abscess (3)	Abdominal abscess (2)
		Eventration (5)	
		Suppurative lesions (12)	

With postoperative surgeon's control 89 patients were embraced (72.9%). Within 30 days after the surgery 39 patients were rehospitalized due to surgical complications (33%). Despite intensive treatment, surgical and nutritional 7 patients (aged between 60 and 79) died. For the adjuvant treatment 71 patients from the group under control were classified. They were divided into two parts depending on age. The first group consisted of patients up to 50 years of age and the second one above 50 years of age. To the first group 18 patients were qualified. After a year observation there was no mortality in this group. In the second group there were 53 patients. In this group we observed the annual survival in 31 patients. Annual mortality in the group receiving the adjuvant therapy was 31%.

DISCUSSION

An analysis of data from 53 studies involving 6885 patients with a n epithelial ovarian carcinoma who were operated to obtain the greatest degree of cytoreduction of lesions and subsequently treated systematically shows, that cytoreduction is an independent prognostic factor related to the rate of survival [1–3]. Each 10% increase in tumor mass reduction meant a 5.5% increase of the survival median. Current studies confirm, that an optimal surgical cytoreduction is the most important prognostic factor in case of advanced ovarian carcinoma [2–5, 7, 10, 17]. A complete cytoreduction shoud be the aim of every operation, and if this is not possible, the aim should be a minimal residual disease [10–16]. Owing to modern surgical techniques, it is possible to perform a multivisceral resection in patients with a large volume tumor and stage IV disease [5, 17]. Data provided in literature suggest, that women operated by gynecologic oncologists and surgical oncologists have a much greater survival rate compared to the one of patients operated by general gynecologists and surgeons without oncologic instruction [26]. Our material comprises operations performed by a team of oncologic and gynecologic surgeons. This has increased the opportunities to use surgical techniques

that not only eliminate the cause of a n acute abdominal disease, but also allow to perform cytoreductive surgery. Also, owing to this, the number of strictly palliative and comfort-reducing operations has been greatly reduced, for example such which are due to stomas. The most frequent complication occurring in a advanced ovarian carcinoma is a gastrointestinal obstruction. It requires emergency surgery — an additional negative postoperative prognostic factor. The rectosigmoid, because of its continuity, is compressed most often and infiltrated by the tumor [18–23]. If this is the unique obstruction–causing section of the gastrointestinal tract, we assume a two-stage procedure. During the first stage, we implant a self-expanding stent to debulk the obstruction and to restore anatomic conditions; then, after 5 to 7 days, we perform a resection. Gastrointestinal debulking by implanting the stent also presents another advantage: the number of debulking stomas has been practically reduced to the situations, where a stent implant is not feasible technically. No large studies exist on the subject of the presented procedural model regarding a gastrointestinal obstruction due to a gynecologic cancer. For example, in a situation where such a complication is lacking, Morton et al. [18] have retrospectively assessed 58 patients who underwent an myometrial resection in conjunction with the rectosygmoid. They restored gastrointestinal continuity in all patients. One patient underwent a colostomy due to an anastomotic leak, and 3 patients underwent pelvic abscess drainage. Similar results were obtained by Peiretti et al. [24], where after a surgical resection due to an ovarian cancer with rectosigmoid infiltration and a restoration of the gastrointestinal continuity in 238 patients, anastomotic leaks occurred in 7 patients, and a pelvic abscesses in 9. In our material, anastomotic stomas occurred in 9 patients, while the most frequent early complication was a recurrence of intestinal obstruction. It occurred in 39 patients and caused rehospitalization. In this group of patients, in most cases a palliative treatment alleviated obstruction symptoms, however a general emaciation due to malnutrition and and neoplastic cachexia resulted in 7 deaths. In this group of patients, obstruction symptoms were due to a multilevel infiltration of the small intestine and colon. According to Jaeger et al. [28], in case of an advanced carcinoma comprising the intestines, a multilevel resection will not significantly improve the results, despite residual disease resection. However, most authors [14, 20, 23, 26] affirm in their works, that these multivisceral resections indeed improve treatment results in patients. A very difficult group of patients as far as the extent of surgery is concerned, are patients with gastrointestinal perforation and gastrointestinal bleeding. In these groups of patients, surgery — often very extensive and not due to the carcinoma — is extremely taxing and hazardous, but indispensable to save their lives. An optimal cytoreduction in these patients is reserved for a narrow group where the assessment of the operative risk does not exceed ASA II. In our material, 9 patients were operated due to gastrointestinal bleeding. Out of them, 6 qualified for adjuvant therapy. Cytoreduction was performed in 3 patients only. The reason was a preoperative hemorrhagic shock and its possible deepening during cytoreductive surgery.

In our study involving 118 patients, 25 of them (21.2%) had not qualified for systemic treatment. The most frequent causes were: intestinal obstruction (16 patients); cardiovascular failure (7patients) and massive thrombosis (2 patients). 93 patients (78.8%) qualified for further treatment. Deaths recorded were 3 (2.5%). 39 patients were rehospitalized within 30 days. The most frequent cause was neoplastic cachexia, impossibility of oral nutrition (without surgical cause) and symptoms of a cancer-induced sub-obstruction defined as "peritonitis carcinomatosa". Deaths recorded in this group were 7, that is 18% of patients.

Summing up, it must be said that an aggressive surgical treatment in respect to patients with an advanced ovarian cancer implicating an acute abdominal disease is a controversial procedure. Controversies center around the lack of a uniform procedural scheme in respect to this group of patients. The traditional surgical procedure consisting only of a local treatment of acute abdominal disease is not an appropriate one in respect to the entire group of patients and it should be reserved for two oncologically opposite groups of patients. The first group comprises patients without residual disease in the abdominal cavity, while the second those patients who display a technical possibility to perform a cytoreduction during emergency surgery. It seems that the extent of surgery in this group of patients is not determined by the advancement of the carcinoma, but by the general condition of the patient, assessed on the basis of the advancement of accompanying internal diseases. This is confirmed by the results of our work, where out of 118 patients, 79 (66.7%) underwent adjuvant therapy without surgical complications and rehospitalization.

CONCLUSIONS

Combining lifesaving surgery with cytoreduction provides an opportunity for further adjuvant treatment. Early rehospitalization within 30 days is related to an increased mortality rate.

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