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Original research

Multivisceral resection for occlusive colorectal cancer: Is it justified?



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ABSTRACT

Background: The only possibility of curative surgery in primary T4, locally advanced, adherent colorectal carcinoma (LAACRC) or recurrent disease with infiltration of adjacent organs is the *en bloc* resection of the invaded structures to achieve clear surgical margins (R0). The role of extended resections for occlusive LAACRC remains unclear. We report on our experience on Multivisceral resections (MVR) for LAACRC patients between 2003 and 2012.

Methods: Twenty-two patients, who were treated with MVR with curative purpose for non-metastatic disease were recruited. General epidemiologic data, clinical findings, surgical treatment and/or multimodal therapy, histo-pathological examination and follow-up were collected. In addition post-operative complications were classified. Patients with occlusive LAACRC (n=6) were compared to patients with uncomplicated presentation (n=16) defined according to the UICC classification.

Results: No statistically significant differences were observed between the two groups, in terms of median age, gender and localization of tumors. R0 resection was performed in 14 (87.5%) patients with uncomplicated tumors and in all patients with occlusive LAACRC. R1 resection was performed in 2/16 (12.5%) patients with uncomplicated disease. No peri-operative mortality was reported in patients of both groups.

In the group of uncomplicated tumors, 11 patients (68.7%) were classified as pathological (p)T4 and 5 patients (31.2%) were classified pT3 whereas in the group of occlusive LAACRC the majority of patients were classified as pT4 (83.3%). Lymph node involvement occurred in 9 patients (56.2%) of the fist group and in two patients (33.3%) of the second group, respectively.

The 3-year survival rates in all patients with both uncomplicated and occlusive diseases were 58.4% and 33.3%, respectively. The 3-years survival of patients with locally advanced adherent rectal cancer was significantly lower than the observed survival of patients with colon cancer (p < 0.0001).

Conclusion: MVR offers cure (R0 resections) in uncomplicated and obstructive LAACRC with three years survival in 40% of patients. Patients affected by rectal cancer with occlusive disease showed significantly decreased survival in comparison with those affected by colon cancer.

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1. Introduction

Locally advanced colon and rectal cancer that invade adjacent organs account approximately for 10% of all primary diagnosed colon cancers. In these patients, emergency presentation such as intestinal occlusion is not uncommon [1].

The prognosis of these patients is often poor, with 35-44% of

cases not suitable for curative treatment. Furthermore, emergency presentation is often associated to a more advanced tumor stage, increased comorbidities and increased post-operative risks.

Although radiotherapy and chemotherapy play an important role in palliation, surgical resection remains the only curative option for the treatment of such advanced tumors [2]. In particular, en-bloc multivisceral resections (MVR) represent often the unique possibility to achieve tumor-free margins (R0) and improve overall survival [3].

However, given the limited number of studies [2] it remains unclear whether MVR in LAARCR patients worsens the early post-

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operative complications in elderly patients and/or patients with emergency presentation.

Elderly are often viewed as high-risk patients with increased rates of emergency presentation and peri-operative mortality. Infact, even if guidelines recommend MVR when patients with advanced primary tumors or recurrent disease show a huge infiltration of structures, in these patients MVR is still associated with high rate of morbidity and mortality [3].

This study aims at evaluating the feasibility of MVR in the elderly and/or in patients with intestinal occlusion as first presentation. To this aim we compared clinical and pathologic profiles of patients with uncomplicated and/or obstructive LAACRC who had underwent MVR.

2. Methods

2.1. Patients

Between 2003 and 2012, 43 patients underwent MVR at the Department of Surgery of the University Hospital of Catanzaro, Italy. Among these patients, 22 had colorectal cancer.

These patients were prospectively documented including epidemiologic data, clinical findings, surgical treatment and/or multimodal therapy, histo-pathological examination, and follow up. Patients affected by carcinomas with Chron's disease, ulcerative colitis and/or familiar adenomatous polyposis were excluded.

Histopathology findings were classified according to the current edition of UICC [5]. Residual tumor classification included clinical and pathological examination of both primary tumor and metastasis. Post-operative mortality was defined as mortality in hospital within 30 days.

Neoadjuvant radio-chemotherapy was performed in all patients affected by rectal cancer in uncomplicated LAACRC but not in patients with occlusive cancer. All patients in both groups received post-operative chemotherapy.

Follow up was performed for at least 3 years, at 3-months intervals for the first 2 years and at 6-months intervals thereafter, with physical examination, estimation of carcino-embryonic antigen (CEA) levels, abdominal ultrasonography, chest X-ray, computed tomography (CT) of the pelvis and colonoscopy/rectoscopy. Follow-up data were collected, either at the university hospital or from written correspondence with the patient's family doctors. Median follow up time was 34 months (range 2–204) in patients with primary treatment and 30 months (2–204) in those with recurrent disease.

2.2. Statistical analysis

 $\rm X^2$ test and Fisher's exact test were used to compare frequencies, and the Mann-Whitney U test for analysis of quantitative data. The Kaplan-Meier method was used to calculate rates of observed overall survival, loco-regional recurrence and distant metastasis. The log rank test was used to compare survival and recurrence. $\rm P < 0.05$ was considered significant. Statistical analysis was carried out using the IBM SPSS Statistic 19.0 software package.

3. Results

In order to evaluate the impact of intestinal occlusion on the execution of MVR for colorectal cancer patients, early post-operative outcome as well as long-term survival of patients who had undergone MVR for uncomplicated or obstructive LAACRC, were compared. Patients recruited for this study underwent MVR for LAACRC between 2003 and 2012 as indicated in Materials and Methods. Among the 22 patients enrolled, 16 patients had

uncomplicated tumour and 6 patients presented intestinal occlusion. Seven men and nine women (median age 60.7 years) had uncomplicated disease, while two male and four female patients (median age 62.8 years) had obstructive cancer. Uncomplicated disease was observed in the rectum in five patients (31.25%) and in sigmoid colon in three patients (18.75%). The occlusive disease was observed in the rectum in one patient (16.7%) and in the sigmoid colon in 3 (50%) patients (Table 1).

As to the pathological classification, in the group of the uncomplicated disease eleven patients (68.7%) were diagnosed pT4, five patients were diagnosed pT3 (31.2%); conversely, in the group of LAACRC with intestinal occlusion the majority of patients were pT4 (83.3%).

Lymph node involvement occurred in nine patients in the group of the uncomplicated disease (56.25%) and in two patients of the group of LAACRC with intestinal occlusion (33.3%), respectively.

A R0 resection was achieved in 14 patients with uncomplicated disease (87.5%) and in all patients with intestinal occlusion. Moreover, R1 resection was performed in two patients with uncomplicated disease (12.5%) but, surprisingly, in no patient with intestinal occlusion. (see Table 4)

Table 2 summarizes surgical treatment received by all patients. Anterior resection was performed in 8 patients (36.3%) and abdominoperineal excision (APE) was necessary for 5 patients (22.7%). Expectedly, APE was necessary more frequently in patients with obstructive cancer (3/6, 50%) compared with patients with uncomplicated disease (2/22, 9%) (Table 2).

The organs most commonly resected *en bloc* in patients with uncomplicated tumors were urinary bladder in males and ovary in females, respectively. Conversely, the organs that were most commonly resected *en bloc* in patients of both groups were the ileal or the jejunal loops. See Table 2 for details.

As to morbidity, we observed that the overall hospital morbidity including surgical complications was not significantly different between patients with uncomplicated LAACRC and patients with occlusive disease (37.5% versus 33.3%, respectively) (Table 3). No mortality was observed in both groups.

As to mortality, we observed that the 3-year overall survival (OS) was 58.4% in patients with uncomplicated disease and 33.3% in patients with intestinal occlusion, respectively. Median OS in uncomplicated and occlusive disease was 48 months and 36 months, respectively (Fig. 1A). The Kaplan-Meier curves comparing OS rates, survival rates according to lymph node positivity are shown in Fig. 1B.

It is of note that, although not statistically significant, we observed that patients with uncomplicated disease who were subjected to R0 resection showed apparently longer OS in comparison with patients subjected to R1 resection. OS rates for complete and incomplete resections in uncomplicated LAACRC patients are shown in the Kaplan-Meier curves in Fig. 2.

Table 1Patients' demographics data and tumour location.

	Uncomplicated	Occlusive	Total
Number of patients	16	6	22
Sex ratio (M:F)	7:9	2:4	
Age (years) median (range)	60.71 (50-72)	62.83 (53-71)	
Site			
Rectum	5	1	6
Sigmoid	3	3	6
Left colon	1	2	3
Splenic flexure	1	0	1
Hepatic flexure	1	0	1
Right colon	3	0	3
Cecum	2	0	2

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