



Breast Cancer Peritoneal Metastasis Role of Cytoreductive Surgery and HIPEC

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Abstract

Peritoneal metastases from breast cancer are extremely rare. The literature provides no information regarding this infrequent event and its management. We present outcomes in 5 patients (mean age 53 years) with peritoneal metastasis from breast cancer without evidence of liver, bone or lung deposits. Patients were treated with Cytoreductive Surgery (CRS) plus HIPEC by the closed technique at 42.5% for 60 min with cisplatin 100 mg/m² and paclitaxel 175 mg/m². Histology of the primary breast cancer was ductal carcinoma in two of them while in the rest three was lobular carcinoma. Mean Peritoneal Cancer Index (PCI) was 16. In 50% of cases complete cytoreduction was achieved. One patient died of the disease at 54 months and four are alive and disease free at 68, 78, 12 and 10 months respectively. These results encouraging that CRS & HIPEC is a promising approach which merits investigation in larger series.

Keywords: Breast cancer; Peritoneal metastasis; Cytoreductive oncology; CRS; HIPEC

Introduction

Breast cancer represents the most common malignancy affecting women worldwide and also the leading cause of cancer deaths. It accounts for approximately 25% of all new cancer diagnoses and 15% of all cancer deaths in female [1]. Although only 5% of breast cancer patients have metastatic disease at primary presentation, metastasis will subsequently affect some 25% of women with breast cancer and result in their ultimate death. The most typical and common sites of metastasis are, in order of frequency, are bone, lung, (parenchymal and pleural deposits), liver, soft tissue and brain. Moreover, much other secondary localization has been described in the literature, including the peritoneal cavity [2]. Peritoneal metastasis from breast cancer is rare and usually affects patients with cancers originating from the gastrointestinal tract and from the female reproductive system [3].

Life expectancy after metastatic diagnosis depends on the predominant metastatic site. While bone metastasis tends to have a more indolent pattern, peritoneal carcinomatosis represents an aggressive pattern with a very high mortality rate [4]. Metastatic breast cancer is considered an incurable disease. For this reason, most of the time, surgery has been indicated only for palliative purposes, at least for the usually sites of metastasis. Systemic chemotherapy was the only curative treatment the last two decades for secondary malignant peritoneal metastatic disease. Currently, surgical cytoreduction combined to intraperitoneal chemotherapy, which was firstly introduced by Sugarbaker in 1995, shows very encouraging results in improving both overall and disease-free survival of these patients [5].

The purpose of our study is to review the literature in the treatment of breast cancer patients with peritoneal carcinomatosis.

Materials and Methods

Materials-patients characteristics-cases

The 518 patients who underwent cytoreductive surgery and HIPEC 5 had histological diagnosis from breast cancer. The clinical data and patients' characteristics and outcome are presented in (Table 1, 2).

Patient: A 48 years old patient, who fifteen years ago underwent a right quadrantectomy for a T²N¹ intraductal carcinoma followed by chemotherapy and radiotherapy. Fifteen years after ascites and ovarian masses are discovered and nodules in parietal peritoneum an omental cake. BRCC of

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Table 1: Clinical data related to breast cancer.

Patient	Age	Stage	HISTOL	BRCAS/ET	Surgery	Radio	Chemo
1	48	T ₂ N ₁	IDC	-	Quad/my	+	+
2	56	T ₂ N ₁	ILC	-	MR mast	-	+
3	45	T ₁ N ₀	ILC	-	Quad/my	+	+
4	65	T ₂ N ₃	IDC	-	MR mast	+	+
5	53	T ₂ N ₁	ILC	-	MR mast	-	+

Table 2: Peritoneal relapse data.

Patient	Year after breast cancer	PCI	CC _s	Survival (Months)
1	15	8	0	78 Alive DF
2	12	14	0	68 Alive DF
3	10	24	1	10 Alive
4	17	10	0	54 Died
5	12	7	0	12 Alive DF

status are negative.

The patient underwent cytoreductive surgery and HIPEC (cisplatin 100 mgr/m² paclitaxel 175 mgr/m²). The PCI was 8 and a Complete Cyteroduction (CC₀) was performed. An Aromatase inhibitor was prescribed for 5 years and the patient is alive, disease free for 78 months.

Patients: A 56 years old woman underwent a left modified medical mastectomy for a T₂N₁ intralobular breast carcinoma followed by Chemotherapy (CMF). Twelve years after a pelvic mass was discovered and diagnostic work-up disclosed peritoneal carcinomatosis.

The patient underwent cyteroductive surgery with peritonectomy procedures and HIPEC. The PCI was 14 and CC₀ was achieved. The woman underwent treatment with hormone therapy and she is alive, disease free 68 months after CRS and HIPEC.

Patients: Woman 45 years old woman underwent a quadrantectomy ten years ago for a T₁N₀ intralobular breast cancer followed by chemotherapy and radiotherapy. She was admitted with anorexia, ascites and palpable omental cake. She was operated and cytoreductive surgery and HIPEC was performed. The PCI was 24 and completeness of cytoreduction was CC₁.

The woman was her +++ in metastatic deposits and the patient was in treatment with Herceptin, then months after operation with minimal residual disease.

Patients: This 65 years old woman underwent a right modified radical mastectomy for intraductal breast cancer for a T₂N₃ and after the operation she received systemic chemotherapy and radiotherapy seventeen years ago. After the operation in 2011 peritoneal metastasis was discovered with ascites and small metastatic deposits in both ovaries. A cytoreductive surgery and HIPEC was performed with a PCI 10 and a complete removal of all visible disease (CC₀). Hormonotherapy with femara was suggested for her and she died with disease progression 54 months after the CRS and HIPEC.

Patients: A 53 years old woman underwent a left modified mastectomy for intralobular breast cancer for a T₂N₁. She continues with systemic chemotherapy and tamoxifen therapy and twelve years after she was referred to our institution with bilateral ovarian mass and ascites. A Complete Cytoreduction (CC₀) and HIPEC were

performed (PCI 7). She continues with an aromatase inhibitor and she is a live twelve months after the operation with no evidence of the disease.

Discussion

Usually peritoneal carcinomatosis is the result of locally advanced tumors of the gastrointestinal or the gynecologic tract or as a common form of recurrence after primary intent of curative resection.

Invasive ductal carcinoma is the most common histological subtype (about 80%) as compared to lobular carcinoma (7% to 20%), which metastasizes more frequently to unusual site [6]. Borst and Ingold in their paper reported the metastatic pattern of invasive lobular carcinoma in comparison to invasive ductal carcinoma. In their report of 2,604 patients with breast cancer in a period of 18 years, they found that invasive ductal carcinoma metastasizes more frequently to the peritoneum in comparison with the others subtypes of breast cancer (1%). More specifically, Invasive Ductal Carcinoma (IDC), commonly involves lungs, pleura, and bones, with Invasive Lobular Carcinoma (ILC) that affects bones, gynecological organs, peritoneum, retroperitoneum and Gastrointestinal (GI) tract [7,8].

Almost the same results but in a series with less patients are shown from the papers from Taal et al. [9]. These Dutch authors reported a greater frequency of primary invasive lobular carcinoma (88%) compared with invasive ductal carcinoma (74%) to metastasize to GI tract. Stomach and colon represent the primary sites of metastasis of these of breast cancer, respectively. Completely different, are the conclusions of the report of Tuthill et al. [10], where a specific association with invasive lobular carcinoma was not observed. In their cohort, the majority (77%) had invasive ductal carcinomas.

In our case 50% of the patients the histological type was ductal carcinoma and in the rest 50% was lobular carcinoma. They were treated with Cytoreductive Surgery (CRS) plus HIPEC. Metastatic breast cancer is considered a disease with very poor prognosis. Due to its incurable character, the role of surgery is indicated only in very specific cases. It has been observed that patients with pulmonary on liver metastases live longer than those without when both primary and metastatic diseases are surgically treated [11].

The treatment with CRS and HIPEC in selected patients and centers with experience showed encouraging results. Cardi et al. [11] in their paper of 5 patients discuss the possibility that cytoreduction and HIPEC may be a promising approach to highly selected patients. In their paper one patient died of the disease at 56 months, 4 are alive and disease-free at 13, 45, 74 and 128 months, respectively. The results on their report are identical to our results.

Of course, as for the other types of peritoneal carcinomatosis, the selection of patients should be based principally on their PCI score on the possibility of obtaining an optimal or suboptimal CC score. If we could compare breast cancer peritoneal metastasis with gynecological or GI peritoneal metastasis, a PCI score <16 and a CC score 0 to 1 would probably be associated with better prognosis.

Another "dilemma" that should be answered is if what we should propose as a treatment option for these patients, a different line of chemotherapy-as usually-or CRS and HIPEC.

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