Gynecologic Oncology 129 (2013) 103–106

Contents lists available at SciVerse ScienceDirect

Gynecologic Oncology

journal homepage: www.elsevier.com/locate/ygyno

Outcomes following percutaneous upper gastrointestinal decompressive tube placement for malignant bowel obstruction in ovarian cancer

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HIGHLIGHTS

- PDT is a safe and effective option for symptom management in ovarian cancer patients with MBO.
- The use of chemotherapy following PDT was associated with an improved overall survival.
- As median survival is 46 days, aggressive therapy after PDT placement should be individualized.

ARTICLE INFO

Article history:
Received 14 December 2012
Accepted 23 January 2013
Available online 29 January 2013

Keywords:
Malignant bowel obstruction
Ovarian cancer
Upper gastrointestinal decompressive therapy
Percutaneous gastrostomy tube

ABSTRACT

Objective. The objective of this study was to evaluate peri-operative and survival outcomes of ovarian cancer patients undergoing percutaneous upper gastrointestinal decompression for malignant bowel obstruction (MBO).

Methods. Retrospective chart review was used to identify patients with ovarian, peritoneal, or fallopian tube cancer who underwent palliative decompressive treatment for MBO from 1/2002 to 12/2010. Kaplan–Meier methods were used to estimate the median survival (MS) and multivariate analysis used to determine if any variables were associated with the hazard of death.

Results. Fifty-three patients met inclusion criteria. Median length of diagnosis prior to intervention was 21 months. Fifteen (28.3%) patients experienced complications and 9 required revision. Forty-nine (92.5%) experienced relief of symptoms after placement, and 91% tolerated some form of oral intake. Following placement, 19 (36%) patients received additional chemotherapy and 21(41%) patients received total parental nutrition (TPN). Thirty-five patients were discharged home/outpatient facility, 16 to hospice care, and 2 died prior to discharge. MS for all patients was 46 days. Patients who received chemotherapy had a MS of 169 days compared to 33 days ($p<0.001$). We failed to find an association between survival and TPN or performance status.

Conclusions. Malignant bowel obstruction is a common complication of ovarian cancer. Management is palliative; risks and benefits of any therapy must be considered. Percutaneous decompressive therapy provides relief from associated symptoms, and allows patients to be discharged home. Median survival in this group is limited, and decisions regarding aggressive therapy should be individualized.

Introduction

Over 22,000 estimated new cases of ovarian cancer will be diagnosed in the United States this year [1]. The majority of women are diagnosed at an advanced stage, and over 75% will develop a recurrence and eventually succumb to their disease [2]. One of the commonly experienced complications of recurrence is malignant bowel obstruction (MBO), which is reported to affect 25–50% of these patients [3,4]. When diagnosed, management usually begins with conservative measures such as bowel rest, intravenous fluids, pharmacologic agents, and nasogastric tube placement [2]. However, if symptoms persist despite this therapy, additional measures, such as surgical intervention, must be considered. Many patient and disease-related factors contribute to this complicated decision making process. Most patients in this situation are not candidates or do not desire major surgery and therefore placement of a percutaneous upper gastrointestinal decompressive tube (PDT) may be considered.

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http://dx.doi.org/10.1016/j.ygyno.2013.01.021

Table 1
Baseline patient characteristics.

	N = 53	Chemotherapy after PGT N = 19	No chemotherapy after PGT N = 34	p-Value[a]
Mean age in years (range)	60 (37–89)	57 (37–74)	61 (39–89)	0.24
Stage				
I	4 (7.5%)	2 (10.5%)	2 (5.9%)	0.59
II	2 (3.7%)	0 (0%)	2 (5.9%)	
III	35 (66%)	14 (73.7%)	21 (61.8%)	
IV	10 (18.9%)	2 (10.5%)	8 (23.5%)	
Unknown	2 (3.8%)	1 (5.3%)	1 (2.9%)	
Grade				
1	3 (5.7%)	1 (5.3%)	2 (5.9%)	>0.99
2	2 (3.8%)	1 (5.3%)	1 (2.9%)	
3	46 (86.8%)	16 (84.2%)	30 (88.2%)	
Unknown	2 (3.8%)	1 (5.3%)	1 (2.9%)	
Median time since initial diagnosis in months (range)	26 (0–96)	27 (6–80)	23.5 (0–96)	0.0.93
Median number of chemotherapy regimens prior to PGT placement (range)	3 (0–8)	3 (2–8)	3 (0–8)	0.54
Median days from last chemotherapy treatment at time of PGT placement (range)	22 (4–936)	18 (9–500)	23 (0–936)	0.44
Mean albumin (range)	2.6 (1.5–3.7)	2.8 (1.6–3.7)	2.5 (1.5–3.7)	0.091
Median number of admissions for MBO in last 6 months (range)	1 (0–4)	1 (0–3)	0 (0–4)	0.14

[a] p-Value based on two-sided *t*-test for means, Wilcoxon rank-sum for medians, and Fisher's exact test for categorical variables.

Though reports of PDT placement demonstrate that it is a safe and feasible option to palliate the symptoms of malignant bowel obstruction details regarding length and type of therapy after PDT placement are not available [5–9]. Furthermore, outcomes such as discharge location, readmission rates, and code status discussion are limited. Therefore, the objective of this study was to evaluate the peri-operative and survival outcomes relating to palliative percutaneous decompression in our patient population.

Methods

Approval to conduct this study was obtained from the Institutional Review Board at The Ohio State University Wexner Medical Center. All patients who underwent placement of a PDT for a diagnosis of ovarian, fallopian tube, or primary peritoneal cancer at our institution from 1/2002 to 12/2010 were retrospectively identified from hospital databases using ICD-9 codes for ovarian, fallopian tube, or peritoneal carcinoma and CPT code for percutaneous gastrostomy tube placement. Patients were excluded from the study for the following: non-epithelial carcinoma, incomplete medical records, or placement for indication other than MBO. Primary outcome was median survival after placement of PDT tube.

Individual subject data were collected retrospectively from inpatient and outpatient medical records. This included patient demographics, patient's age at diagnosis, clinical performance status, date of initial surgery, surgical procedures performed, International Federation of Gynecology and Obstetrics (FIGO) stage, tumor histology and grade, adjuvant therapy(s) received, and number of prior admissions for bowel obstruction. Surgical reports at the time of PDT placement were reviewed in all cases. The following peri-operative information was abstracted: patient's age at time of procedure, code status (before and after procedure), length of stay, complications related to the procedure, symptom relief (defined as resolution of nausea and vomiting), post PDT placement cancer treatments, use of total parenteral nutrition (TPN), diet tolerance, hospital readmissions, hospice referral, and date of last follow-up/death.

Kaplan–Meier methods were used to estimate the median survival in recurrent ovarian cancer patients that had a PDT placed. Log-rank methods were used to test for survival differences across categorical variables while a Cox proportional hazard regression was used to determine if any of the patient demographics or clinical characteristics was associated with the hazard of death. The patient population was characterized by means, standard deviations, and medians for continuous variables and by frequencies and percent for categorical variables. All analyses were run using Stata 11.1, Stata Corporation, College Station, TX.

Results

A total of 73 patients met study inclusion criteria. Twenty patients were excluded for the following reasons: PDT placed for alternate (non-MBO) indications (11), incomplete medical records (5), and primary disease site not consistent with ovarian, peritoneal, or fallopian tube cancer (4); leaving 53 evaluable patients. Patient characteristics are shown in Table 1. The median age for the entire study group was 60 years (range 38–78 years). The mean follow-up time for study patients was 3.3 months (range <1–31 months). A majority of patients had a Eastern Cooperative Oncology Group performance status of 0–3, and the median time from initial diagnosis to PDT placement was 26 months (<1–96 months). Prior to PDT placement, 87% of patients received multiple chemotherapy regimens (median of 3 regimens) and the median time since last cycle of chemotherapy prior to PDT placement was 1.4 months. Preoperative albumin level was available for 45 patients with a mean value of 2.6 g/dL. Only 17.8% (8/45) were noted to have an albumin level within the institutional normal range. Over half (55%) had other admissions for MBO in the 6 months prior to the admission for PDT placement. In this time frame, only four patients had undergone surgery for MBO. Of these four, one was successfully palliated for 5 months prior to PDT placement and the other three had failed operations and required PDT during that hospital stay. The median length of stay prior to placement of PDT was 6 days (range 1–27).

All patients were able to have a tube placed for decompression of the upper GI tract. Prior to intervention, 38 (74.5%) patients had ascites and/or 41 (80.3%) had carcinomatosis on imaging. Though drainage of ascites prior to PDT placement was not routinely required, 3 patients (5.7%) underwent a preoperative paracentesis. Thirty-three (62%) patients had their procedure completed by a general surgeon, 13 (25%) by an interventional radiologist, and 6 (11%) by a gastroenterologist. Eight (15%) procedures were completed under general anesthesia and the remainder were completed under conscious sedation. Four patients failed an initial attempt at endoscopic placement; failure to trans-illuminate was cited as the reason for failure in each of these cases, and was attributed to the presence of both ascites and carcinomatosis on imaging. Among these patients two underwent successful endoscopic placement under general anesthesia, one required an open gastrostomy tube, and one underwent successful placement of a jejunostomy tube by interventional radiology. Two patients underwent primary jejunostomy placement, without attempt at gastrostomy, by interventional radiology.

Forty-nine patients (92.5%) experienced control of symptoms (nausea and vomiting) post-PDT, defined as resolution of symptoms prior to discharge; however, 46 patients required supplemental anti-emetic medication. Following PDT placement, 48 (91%) patients were able to