

Bowel obstruction in advanced cancer

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Abstract

Purpose: Assessment of treatment of cancer patients with bowel obstruction, identification of prognostic factors, and assessment of reference to palliative care.

Methods: Records of patients with a diagnosis of bowel obstruction over a 6-month (January–June 2013) period were reviewed.

Results: Seventy-five patients were diagnosed with bowel obstruction. Fifty-one (68%) were female and the median age was 65 years (27–100). The most frequent cancer was colorectal, 30 (40%), followed by gynecological cancer, 20 (27%). Forty-three (57%) patients underwent conservative treatment; 26 (35%) underwent surgery; and 6 (8%) had a stent placement. In 68 (91%), the bowel obstruction was resolved. Three years after the bowel obstruction episode, 15 (20%) patients were still alive. An analysis of the possible association of variables recorded with mortality was carried out, and for death at the first admission, only the resolution of the obstruction was significant ($P < .001$); for the 3-year survival the significant factors were hemoglobin >10.7 g/dL ($P < .001$) and ascites ($P = .001$) at the time of obstruction. Thirty-seven (49%) patients were referred to palliative care.

Conclusions: Although bowel obstruction in cancer patients is usually associated with a short life expectancy, some patients have relatively long survivals. Only about half of the patients were referred to palliative care.

Keywords: advanced cancer, bowel obstruction, conservative treatment, palliative care, stent, surgery

Introduction

Bowel obstruction is a common occurrence in advanced cancer patients. It occurs more frequently in patients with alimentary tract neoplasms or gynecological tumors.¹ The obstruction may be located at any level of the bowel, but small bowel involvement is 4 to 5 times more frequent than large bowel involvement² and it can also occur in both simultaneously.³ It can occur at one or more levels.³ Even in cancer patients, the obstruction may be due to a benign cause in a relatively high percentage of cases, such as stricture or radiation enteritis.⁴

Surgery is the method which can potentially solve the obstruction for a longer period. However, the prognosis in many cases does not depend only on the obstruction, but also on the overall extension of the disease, comorbidities, treatments undergone previously, ascites or the frailty of the patient.^{5,6} Surgery in patients with advanced cancer is associated with many complications, including early mortality,⁷ but the overall mortality is also high, with a median survival of 30 to 90 days.⁸ Therefore, patients should be carefully selected for surgery,

although the uncertainty involved in these decisions is high. When surgery is unlikely to be useful or it failed, medical treatment may control the main symptoms of bowel obstruction.

We were interested in reviewing the outcomes of the treatment of this condition at our oncology center and how many patients diagnosed with bowel obstruction were referred to palliative care. Although there are several studies on bowel obstruction in advanced cancer, different researchers address it in diverse ways and usually add something to what is already known. As far as we know, there is not any study on this topic carried out in Portugal. We believe that this manuscript may be of interest to a palliative and supportive care audience because it may provide another perspective from this country.

Methods

For this retrospective study, we collected data from the records of inpatients admitted to any of the hospital departments with the diagnosis of bowel obstruction during a 6-month period (January–June 2013). The diagnosis of those patients was checked, and this study included only those with a symptom combination suggestive of bowel obstruction such as nausea, vomiting, constipation, abdominal pain, abdominal distention, and a radiological method supporting the diagnosis. The radiological methods were mainly plain upright abdominal X-ray, with air fluid levels or bowel distention, or a computed tomography (CT) scan.

Besides the demographic data, we also recorded the date of the diagnosis of the primary cancer, the date of admission and discharge, if they were dead or alive and the date of death or of the last observation. We also recorded the treatments patients had undergone for cancer and the treatment for bowel obstruction, surgery, stent, or medical and the outcome of that treatment. The bowel obstruction was deemed resolved when patients resumed eating without vomiting and their bowel started functioning again.

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For the statistical analysis of discharge and 3-year survival, the available variables studied were primary cancer, comorbidities, gender, age, time of diagnosis of primary cancer to time of bowel obstruction, type of treatment (stent, surgery, conservative), resolution of the obstruction, ascites, hemoglobin, and albumin. Conservative treatment was defined as any treatment which did not involve stent insertion or surgery beyond exploratory laparotomy without any further intervention. These variables were selected because they were the most commonly recorded factors likely to influence survival according to published data. For survival analysis, age, hemoglobin, albumin, and interval between diagnosis and bowel obstruction were recorded using the median values as cut-off.

Descriptive statistics methods were used for the analysis of data. To evaluate whether associations between variables existed the chi-squared test was used. Survival curves were calculated using Kaplan–Meier estimator and compared using log-rank test. For multivariate analysis, the Cox regression was used. The level of significance was deemed to be 0.05. Missing data were omitted. The statistical analysis was performed with SPSS software, version 24.0.

Results

During the period under study, 75 patients were diagnosed with bowel obstruction confirmed as indicated in the “Methods” section. Fifty-one (68%) were female and the median age was 65 years (27–100). The most frequent cancer was colorectal, 30 (40%), followed by gynecological cancer, 20 (27%), and the most frequent metastatic site was the peritoneum, 37 (49%) (Table 1). Thirty (40%) of the patients had no comorbidities; the others had several types of comorbidities the most frequent being diabetes mellitus and hypertension. The most used image method for the diagnosis was an erect abdominal plain X-ray; a CT scan was used in only 11 (15%) patients.

Cancer treatments previously undergone by patients were as follows: surgery, 56 (75%), 55 (98%) of which were abdominal; chemotherapy, 57 (76%); and radiotherapy, 22 (29%); other, 10 (13%). Six (8%) patients had previously undergone surgery for bowel obstruction. Five (7%) patients did not undergo any antineoplastic treatment.

Table 1
Demographic data.

	N	%
Primary site		
Colorectal	30	40
Gynecological	20	27
Stomach	9	12
Other	16	21
Total	75	100
Metastases		
Peritoneum	37	49
Liver	26	35
Locally advanced	16	21
Lung	13	17
Other	25	33
Gender		
Female	51	68
Male	24	32
Age		
Median (years)	65	(27–100)

Table 2
Types of surgery for bowel obstruction.

	N	%
Colostomy	9	35
Segmental resection and anastomosis	7	27
Lysis of adhesions	4	15
Exploratory laparotomy*	3	12
Lysis of adhesions and resection	2	8
Resection and ileostomy	1	4
Total	26	100

* Exploratory laparotomy entails impossibility of further action.

Forty-three (57%) patients underwent conservative treatment; 26 (35%) underwent surgery; and 6 (8%) had a stent placement. The most frequent types of surgery were colostomy in 9 (35%) cases and segmental resection and anastomosis in 7 (27%) (Table 2). Eight (31%) of the 26 patients who underwent surgery had a benign cause for the obstruction. Of those patients who had undergone surgery, during the exploratory laparotomy, 3 presented a condition that made further intervention unfeasible. Therefore, those patients were included in the conservative group for the statistical analysis of resolution of the obstruction and survival.

In 68 (91%) patients, the bowel obstruction was resolved: all the 6 patients who had a stent placement; 21 (91%) patients who underwent surgery; and 41 (89%) of those who had conservative management. Fifty-six (75%) patients were discharged and 19 (25%) died in hospital. Fifteen (20%) patients were still alive 3 years on: stent—0; surgery—7 (30%); conservative—8 (17%).

The only variable associated with discharge was the resolution of the obstruction ($P < .001$); all the 7 patients whose obstruction did not resolve died in the hospital. In univariate analysis, the variables associated with 3-year survival were the primary tumor, a level of hemoglobin >10.7 g/dL and the absence of ascites at the time of the episode of bowel obstruction (Table 3). In the multivariate analysis, only a hemoglobin level >10.7 g/dL (95% confidence interval [CI]: 0.249–0.718; $P = .001$) and the absence of ascites (95% CI: 0.179–0.698; $P = .003$), at the time of the bowel obstruction, were associated with 3-year survival. Although comorbidities did not influence statistically discharge, 3-year survival or the treatment, all patients with a stent had comorbidities and interestingly patients who underwent surgery and conservative treatment matched the same proportion of patients with comorbidities—57%.

From the 56 patients discharged alive, 39 (70%) did not have other episodes of bowel obstruction, but 9 (16%) had 1 admission, 4 (7%) had 2, 1 (2%) had 3, 1 had 4, 1 had 5, and another one had 9 admissions for bowel obstruction. Patients with 5 and 9 admissions had radiation enteropathy. Three patients underwent a new surgery for bowel obstruction, 1 had a surgery, 1 stent placed, and 1 had 2 stents.

Only 37 (49%) were referred to palliative care. The difference in survival rate between patients referred and not referred to palliative is highly significant: only 1 in 37 (3%) patients referred to palliative care was still alive 3 years on whereas 14 of the 38 (37%) not referred were alive ($P < .001$).

Discussion

In this study, the main diagnoses associated with bowel obstruction were like those described in the medical literature

Table 3
Univariate analysis of factors influencing survival.

Factors	Median, d	P
Age		
≤65	83	.542
>65	173	
Sex		
Male	129	.812
Female	89	
Primary cancer		
Colorectal	370	.018
Gynecological	78	
Gastric	83	
Other	47	
Treatment		
Stent	49	.094
Surgery	370	
Conservative	78	
Comorbidity		
Yes	78	.124
No	251	
Albumin, g/dL		
≤32	51	.460
>32	207	
Hemoglobin, g/dL		
≤10.7	70	<.001
>10.7	323	
Ascites		
Yes	39	.001
No	207	
Interval diagnosis-obstruction, d		
≤514	96	.415
>514	129	

concerning this issue.¹ About one-third of patients underwent surgery, but in some of them surgery consisted of an exploratory laparotomy that did not allow any further intervention.

Stents are important resources for selected patients. In this study, all patients with a stent insertion had the obstruction resolved. The success rate for stents has been reported as between 70% and 100%.⁹ They can be used when the obstruction can be reached by the endoscope, when there is only one place obstructed and surgery is risky. The recovery after a stent insertion is usually quicker than after surgery, and the short-term quality of life can also be better.⁹ A recently published study confirms those data and shows that the probability of restenting 1 year on is high.¹⁰ However, in the present study, none of those who had a stent inserted had a 3-year survival probably because they were selected for stent insertion and not for surgery as their condition did not advise surgery; in this study, all patients with a stent insertion had comorbidities.

In many cases, the obstruction was resolved in a conservative manner, and survival was not significantly different from patients who underwent surgery. This fact had also been found previously by others.¹¹ The resolution of the obstruction was the only factor associated with discharge of the patients and all patients whose obstruction failed to be resolved died while in hospital. This factor was not related to the method of treatment used.

It is also surprising that 20% of patients were still alive at 3 years after being diagnosed with bowel obstruction. Although bowel obstruction is usually associated with a poor prognosis and low median survival, some patients have relatively long survival rates as in this study, despite all of them had symptoms and image suggestive of the diagnosis. Unusually long survival

rates have been described in several articles,^{11–13} but we believe that this point deserves reiteration. The variables associated with a longer survival rate in the multivariate analysis were the hemoglobin level and ascites at the time of the bowel obstruction. Probably a higher hemoglobin level is associated with other favorable factors which could not be analyzed, such as the performance status at the time of the obstruction, a factor found by others to influence survival¹⁴; however, we had no opportunity to analyze this factor as it was not always included in the records. Ascites is a well-known factor of poor prognosis in patients with bowel obstruction.^{1,15–17} The time of diagnosis of primary cancer to time of bowel obstruction did not influenced survival as occurred in other study.¹¹

From the patients who underwent surgery, 31% had a benign cause. This is a recurrent observation in studies of bowel obstruction in advanced cancer. The rate of benign causes varies but may be as high as 40%⁴ and may be due to previous treatments such surgery and radiotherapy causing strictures and adhesions.

Patients admitted to palliative care had a shorter survival rate than other patients. This is not surprising as patients referred to palliative care were probably those in a poorer condition with a low performance status. However, more patients than those admitted to palliative care died in the trajectory of their disease and possibly could have benefit from it at some point. In fact, palliative care can help patients with bowel obstruction associated with advanced cancer as have being shown since the pioneer work of Baines et al published in 1985.¹⁸

One weakness of this study concerns diagnosis, as CT scan, which is one of the image methods more accurate for the diagnosis of bowel obstruction, was used only in a few patients. However, suggestive symptoms and a plain erect abdominal X-ray with compatible signs were used for the diagnosis of bowel obstruction¹¹ and is deemed by other authors “sufficient in most cases to confirm the diagnosis” of bowel obstruction.¹

Conclusion

Bowel obstruction occurs more frequently in abdominal and pelvic cancers such as digestive and gynecological cancers. Most of the episodes of obstruction were resolved with conservative measures. Where indicated, the placement of a stent may be very effective. Some patients have relatively long survival rates after an episode of bowel obstruction solved by surgery or conservative approach. Only about half of the patients were referred to palliative care, mainly those in the poorest condition, as most of them died following the episode of bowel obstruction.

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Conflicts of interest

The study was approved by the Hospital’s Ethics Committee.

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