

Gastrointestinal obstruction in palliative care: a review

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Abstract: Many symptoms are experienced by dying patients. Any symptom can be debilitating and affect the patient's and the family's quality of life. Symptom research is complicated, especially in patients receiving palliative care because the studies needed are methodologically challenging. Symptoms management is the essential goal in palliative care. Many people rate this as one of the most important issues whether they are at home, in a hospital or at other assisted care. Bowel obstruction is rarely an emergency, and usually evaluated by multidisciplinary teams. Tailored management is based on the underlying aetiology and pathophysiology. When several symptoms occur together, they can be interrelated and management can be complex. This article discusses the management of intestinal obstruction experienced by palliative care patients

Keywords: Bowel obstruction • Palliative care • Symptoms

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Introduction

Bowel obstruction is a common complication in patients with abdominal or pelvic cancers, particularly in pancreatic, colorectal and peritoneal carcinomatosis. The mean time interval from diagnosis of cancer and the onset of inoperable malignant bowel obstruction was 13.1 ± 6.4 months (range 6–24 months) (1).

The prognosis of patients with both mechanical and functional obstruction due to advanced cancer who received maximal treatment is very poor, with survival ranging from a few weeks to a few months (2, 3). The administration of parenteral nutrition did not affect prognosis.

Epidemiology

The prevalence of bowel obstruction ranges between 4% and 25% in ovarian carcinoma and colorectal cancer. In patients with advanced ovarian cancer the frequency of bowel obstruction can be as high as 42% and is a major proximate cause of death.

The small bowel is more commonly involved than the large bowel (61% vs. 33%) (4, 5).

Bowel obstruction can be partial or complete, single or multiple, due to benign or malignant causes and can occur anywhere along the gastrointestinal tract, from the oesophagus to the rectum.

Although it is more frequent in patients with colon cancer (4% to 24% of patients) and gynecologic cancers (5% to 42% of patients), melanoma, lung, breast, gastric, biliary, and pancreatic cancers can also be sources of obstructions (6).

Causes

Up to 10% to 48% of bowel obstructions in cancer patients are due to benign causes, such as adhesions, volvulus, intussusception and fibrosis from radiation enteritis or intra-abdominal chemotherapy (7). Diabetic neuropathy, constipation, and medications such as opioids and anticholinergic drugs might also contribute to bowel obstruction, whether mechanical or functional, by slowing down intestinal transit or further blocking a stenosed area.

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There are also functional obstructions (or adynamic ileus), in which the mesentery, celiac, or enteric plexus might be infiltrated by tumours, malignant involvement of the celiac plexus, paraneoplastic pseudo-obstruction, paraneoplastic neuropathy. Chronic intestinal pseudo-obstruction may occur due to diabetes mellitus (8).

Pathophysiology

Several mechanisms may be involved in the onset of bowel obstruction and there is variability in both presentation and aetiology.

The pathophysiology of obstructions involves a vicious cycle of distension due to gas and non-absorbed secretions, followed by more fluid secretions causing more distension in the bowel. So when the bowel mucosa gets damaged by the hypertensive state of distension, it produces even more secretions via an inflammatory response and release of vasoactive intestinal polypeptide (9). This cycle results in bloating, pain, cramping, nausea and vomiting. The symptoms vary in severity and rapidity of onset depending on the level of the obstruction. For instance, in gastric outlet obstruction, there is early and severe nausea and vomiting. In small bowel obstruction, there is pronounced cramping and nausea with vomiting. In large bowel obstruction, symptoms appear later in the course of the obstruction, with considerable distension and occasional paradoxical diarrhoea owing to bacterial overgrowth.

There can be two types of pain: a continuous one, from the distension and the tumour itself, and a crampy one, which can be episodic and occurs mostly after meals. The vomit might be feculent in large bowel obstruction, whereas it is biliary in small bowel and gastric outlet obstructions. In complete obstruction, flatus and stool are absent.

Assessment

A history of crampy abdominal pain, abdominal fullness, and postprandial nausea with or without vomiting or hiccups is suggestive of obstruction. A history of a gastrointestinal or genitourinary malignancy or a previous abdominal operation increases the likelihood. The colour or smell of the vomitus does not correlate with the site of obstruction; however, time of vomiting after eating does correlate. Nausea and vomiting occurring about 45 minutes after meals suggests a gastric outlet or duodenal obstruction. Nausea with or without vomiting that occurs several hours after eating correlates with large bowel obstruction. Passage of gas

or stool per rectum argues against obstruction, as some peristalsis must be present. Blood work might be helpful both for evaluation of hydration and electrolyte status and for prognostication.

Physical examination of complete bowel obstruction shows an absence of bowel sounds. High-pitched or rushing bowel sounds have traditionally been associated with impending obstruction, although the sounds are neither sensitive nor specific when compared with 'gold standard' radiographic assessments.

Radiologic investigations

A plain abdominal X-ray is a simple and valuable investigation to ascertain obstruction and also the presence of constipation, although 75% of plain films are non-diagnostic. But computed tomography (CT) scan is required to determine the cause of obstruction. CT scan has a reported sensitivity of 93% and specificity of 100% in determining the cause of bowel obstruction (10). Gastrograffin, an osmotic contrast medium, used as a contrast agent can reduce luminal oedema and resolve partial obstruction (11–13).

Management

It is essential to determine the underlying cause of bowel obstruction, as non-malignant causes like intra-abdominal bands or adhesions due to prior surgery, post-radiation fibrosis or faecal impaction secondary to ongoing morphine use will require definitive treatment. In one study, 48% of bowel obstruction in colorectal cancer had non-malignant aetiologies (14).

Treatment options depend on the type of obstruction, urgency of the problem, prognosis, and the preferences of the patient. Even palliative patients can benefit from surgery if they are in good physical condition with only one site of obstruction and there is no resolution of the bowel obstruction after 48–72 hours of conservative management. In benign causes of obstruction, the outcome is much more favourable (15).

If the tumour is inoperable or irresectable or the patient refuses surgery, endoscopically placed stents in proximal small or large bowel obstructions can palliate the patient's symptoms quite effectively.

Medical management

When the patient's situation is not amenable to surgery or stenting, medical management should be the mainstay

of care; the aim is to relieve symptoms to an acceptable level, and sometimes to reverse a partial occlusion.

Medical treatment should begin with the treatment of dehydration, as patients tend to be dehydrated early due to accumulation of water and electrolytes in intestine and poor fluid intake due nausea and vomiting. It aims to relieve pain, nausea, and vomiting by looking at the pathophysiology of these symptoms (16) (Table 1).

Pain, nausea, vomiting, and fluid status need to be addressed at the outset. In many circumstances, this involves intravenous hydration and correction of electrolyte abnormalities, as well as insertion of a nasogastric (NG) tube for decompression and relief of nausea and vomiting, or at a minimum, giving the patient nothing by mouth.

Pharmacological treatment includes a combination of analgesics, antiemetics, antisecretory drugs and steroids. Early introduction of pharmacological treatment can reduce symptoms, reverse malignant bowel obstruction and provide better quality of life and quality of death.

Analgesics

The administration of analgesics, mainly strong opioids given subcutaneously (SQ) or transdermally, is aimed at ensuring proper absorption that the oral route cannot provide. Colicky pain if present can be treated with anticholinergic drugs in association with opioid.

Antinauseants

Management of nausea and vomiting can be achieved by a cautious trial of a prokinetic agent such as metoclopramide 30–60 mg/24 h SQ if the patient is passing flatus. It may help resolve incomplete obstruction. It is also the drug of choice in patients with functional bowel obstruction but not recommended in the presence of complete bowel obstruction and in gastric outlet obstruction. When metoclopramide is not helpful, cyclizine or haloperidol is also recommended. If the patient is experiencing colic with nausea,

Table 1. Medications for treatment of obstruction.

Category	Medication	Dosage
Analgesic drugs	Opioids (SQ or transdermal) Steroids (e.g., dexamethasone) Antispasmodic–anticholinergics	As needed to control symptoms See below See below
Antisecretory agents	Dexamethasone Octreotide Antispasmodic–anticholinergics • Hyoscine butylbromide • Glycopyrrolate • Scopolamine H2-receptor antagonists (e.g., famotidine, ranitidine) Proton pump inhibitors	6–20 mg/d SQ trial for 3–5 d 100–1500 µg/d SQ 40–120 mg/d SQ 0.1–0.4 mg/d SQ 0.2–2 mg/d SQ or 1–2 transdermal patches of 1.5 mg every 3 d As needed to control symptoms As needed to control symptoms
Antiemetic drugs	Metoclopramide (if no colicky pain) Haloperidol Olanzapine Phenothiazines (sedation) • Chlorpromazine • Prochlorperazine • Methotrimeprazine Dimenhydrinate Ondansetron	40–240 mg/d SQ 5–15 mg/d SQ 2.5–20 mg/d SL 50–100 mg rectally or IM every 8 h 25 mg rectally every 8 h 6.25–50 mg/d SQ 50–100 mg/d SQ, IV, or rectally 4–8 mg twice daily IV
Other	Laxative suppositories, enemas Amidotrizoate	As needed to control symptoms A single 50-ml oral dose with metoclopramide, octreotide, dexamethasone SQ in partial obstruction

IM—intramuscularly, IV—intravenously, SL—sublingually, SQ—subcutaneously, d—day.
Data from Hanks et al., (6), Soriano and Davis, (8) and Glare et al. (16)

hyoscine butylbromide should be considered due to its antisecretory and antispasmodic effects. When all else fails, some centres recommend phenothiazine derivative. Some patients may benefit from a 5HT₃ receptor antagonist (ondansetron), as bowel distension causes the release of serotonin/5HT from enterochromaffin cells in the bowel (17).

Antisecretory agents

The *somatostatin analogue* (octreotide) has similar effects as hyoscine in reducing gastrointestinal secretions but without anticholinergic effects. Octreotide also inhibits release of gastrointestinal hormones, reduces gastric acid secretions, slows intestinal motility, decreases bile flow and reduces splanchnic blood flow. It may relieve partial bowel obstruction secondary to mechanical causes, as it reduces the hypertensive state within the lumen of the gut. It is used in the dose range of 300–600 mcg/24 h SQ (18).

Corticosteroid has controversial role in malignant bowel obstruction. However, it has added value as an anti-inflammatory by decreasing gut wall oedema, thereby relieving some of the stenosis and decreasing the excretion of water into the lumen, but without survival effect (19, 20). There is evidence that dexamethasone given intravenously/SQ in the dose range 6–16 mg may bring about the resolution of bowel obstruction. Equally, the incidence of side effects in all the included studies is extremely low. It also has a central antiemetic effect (21).

Percutaneous gastrostomy

When obstructive symptoms cannot be controlled with medications, percutaneous gastrostomy is believed to be a more effective and acceptable alternative to the prolonged use of an NG tube (22). Patients can even enjoy eating and drinking, releasing the gastric bolus via the percutaneous gastrostomy tube afterward.

References

- [1] Krouse RS. Surgical management of malignant bowel obstruction. *Surg Oncol Clin N Am.* 2004; 13:479-490.
- [2] Kolomainen DF, Barton DP. Surgical management of bowel obstruction in gynaecological malignancies. *Curr Opin Support Palliat Care.* 2011;5:55-9.
- [3] Chakraborty A, Selby D, Gardiner K et al. Malignant bowel obstruction: natural history of a heterogeneous patient population followed prospectively over two years. *J Pain Symptom Manage.* 2001; 41:412-20.
- [4] Ripamonti C. Malignant bowel obstruction. In: *Gastrointestinal Symptoms in Advanced Cancer Patients.* 2002; Oxford University Press.

Palliative sedation

Palliative sedation is a last option for patients with intractable symptoms who have advanced disease and are in the last days of life.

Conclusion

Bowel obstructions are not uncommon in palliative care patients, and patients benefit from evaluation of their special circumstances by multidisciplinary teams of physicians. The optimal treatment remains a debated issue, with the initial management that includes an evaluation of their overall status, including the stage of their disease trajectory and their goals of care. Although surgery has been the primary treatment for malignant obstruction, it may be unsuitable due to poor general condition or expected poor survival. A number of treatment options are now available for such patients. Medical treatment by opioids, corticosteroids, anticholinergic medications, octreotide, and antiemetic medications can be an effective approach for symptoms control. Consider NG suction or percutaneous gastrostomy for patients with refractory symptoms and/or upper bowel obstruction together with efforts directed at care of other aspects of the patient's suffering, including psychological distress and spiritual concerns. Based on our experience, the backbone of management is the explanations of the diagnosis, expected outcome, and different treatment options available, including the usual complications, should be provided to patients and family members, and discussed within the context of their level-of-care preferences.

Conflict of interest

The authors certify that there is no potential or actual conflict of interest related to this research.

- [5] Ripamonti C, Mercadante S. Pathophysiology and management of malignant bowel obstruction. *Oxford Textbook of Palliative Medicine*. 3rd ed. 2003; Oxford University Press.
- [6] Hanks GW, Cherny NI, Christakis NA et al. *Oxford textbook of palliative medicine*. 4th ed. New York, NY: 2010; Oxford University Press.
- [7] Downing GM, Wainwright W. *Medical care of the dying*. 4th ed. Victoria, 2006; BC:Victoria Hospice Society.
- [8] Soriano A, Davis MP. Malignant bowel obstruction: individualized treatment near the end of life. *Cleve Clin J Med*.2011; 78:197-206.
- [9] Ripamonti CI, Easson AM, Gerdes H. Management of malignant bowel obstruction. *Eur J Cancer*.2008; 44:1105-15.
- [10] White SI, Abdool SI, Frenkiel B et al. Management of malignant left-sided large bowel obstruction: a comparison between colonic stents and surgery. *ANZ J Surg*.2011; 81:257-60.
- [11] Taourel PG, Fabre JM, Pradel JA et al. (1995). Value of CT in the diagnosis and management of patients with suspected acute small bowel obstruction. *AJR Am J Roentgenol*. 165:1187–92.
- [12] Mercadante S, Ferrera P, Villari P et al. Aggressive pharmacological treatment for reversing malignant bowel obstruction. *J Pain Symptom Manage*. 2004; 28:412-6.
- [13] Roeland E, von Gunten CF. Current concepts in malignant bowel obstruction management. *Curr Oncol Rep*.2009; 11:298-303.
- [14] Spears H, Petrelli NJ, Herrera L et al. Treatment of bowel obstruction after operation for Colorectal carcinoma. *Am J Surg*. 1998; 155:383–6.
- [15] Foo CC, Poon JT, Law WL. Self-expanding metallic stents for acute left-sided largebowel obstruction: a review of 130 patients. *Colorectal Dis*.2011; 13:549-54.
- [16] Glare PA, Dunwoodie D, Clark K et al. Treatment of nausea and vomiting in terminally ill cancer patients. *Drugs*.2011; 68:2575-90.
- [17] Twycross R. (1995). Symptom management in advanced cancer. 175–9.
- [18] Ripamonti C, Panzeri C, Groff L et al. The role of somatostatin and octreotide in bowel obstruction: Pre-clinical and clinical results. *Tumouri*. 2001; 87:1–9.
- [19] Mercadante S, Ferrera P, Villari P et al. Aggressive pharmacological treatment for reversing malignant bowel obstruction. *J Pain Symptom Manage*.2004; 28:412-6.
- [20] Laval G, Girardier J, Lassaunière JM et al. The use of steroids in the management of inoperable intestinal obstruction in terminal cancer patients: do they remove the obstruction: *Palliat Med*.2002; 14:3-10.
- [21] Feuer J, Broadley E. Corticosteroids for the resolution of malignant bowel obstruction in advanced gynaecological and gastrointestinal cancer.2008; *Cochrane Database of Systematic Reviews*.
- [22] Mori M, Bruera E, Dev R. Complications of a gastrostomy tube used for decompression of an inoperable bowel obstruction in a patient with advanced cancer. *J Pain Symptom Manage*.2009; 38:466-72.