

Respiratory distress due to malignant ascites palliated by hyperthermic intraperitoneal chemotherapy

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Author contributions: de Hingh IHJT performed the surgical operation; van den Houten MML and van Oudheusden TR wrote the manuscript; Luyer MDP, Nienhuijs SW and de Hingh IHJT critically reviewed the manuscript for intellectual content.

Ethics approval: The study was reviewed and approved by the Catharina Hospital Institutional Review Board.

Informed consent: Written informed consent was obtained from the patient for the publication of this case report and accompanying images.

Conflict-of-interest: The authors declare no conflict of interest.

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Received: October 17, 2014

Peer-review started: October 18, 2014

First decision: November 27, 2014

Revised: December 28, 2014

Accepted: January 30, 2015

Article in press: February 2, 2015

Published online: March 27, 2015

increased vascular permeability and obstruction of lymphatic channels lead to the accumulation of fluid in the abdominal cavity. This case report describes a severely symptomatic patient with malignant ascites. The previously healthy 73-year-old male was presented with abdominal distention causing respiratory distress. Computed tomography revealed large amounts of ascites, a recto-sigmoidal mass with locoregional lymphadenopathy and an omental cake. Biopsy taken during colonoscopy revealed an adenocarcinoma of the colon with signet cell differentiation. A widespread peritoneal carcinomatosis was found during a diagnostic laparoscopy. The extent of peritoneal disease rendered the patient not suitable for cytoreductive surgery with curative intent. The ascites proved to be refractory to ultrasound-guided paracentesis; thus, a decision was made to perform palliative hyperthermic intraperitoneal chemotherapy without cytoreductive surgery. Consequently, ascites production stopped, and the respiratory distress was relieved thereafter. The postoperative recovery was uneventful. Ascites recurred eight months later, and a second hyperthermic intraperitoneal chemotherapy procedure was performed. The patient was still alive at the time of writing, 16 mo after the initial diagnosis.

Key words: Ascites; Intraperitoneal chemotherapy; Palliative hyperthermic intraperitoneal chemotherapy; Peritoneal carcinomatosis; Colorectal cancer

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Core tip: Malignant ascites can cause debilitating symptoms in patients with peritoneal cancer. This report describes a patient with severe respiratory distress caused by malignant ascites from peritoneal colorectal carcinomatosis. The patient was successfully treated with hyperthermic intraperitoneal chemotherapy without cytoreductive surgery. Our results suggest that

Abstract

Malignant ascites is a common symptom in patients with peritoneal cancer. Current assumption is that an

hyperthermic intraperitoneal chemotherapy without cytoreductive surgery should be considered in patients with symptomatic ascites, even when their prognosis is dismal.

van den Houten MML, van Oudheusden TR, Luyer MDP, Nienhuijs SW, de Hingh IHJT. Respiratory distress due to malignant ascites palliated by hyperthermic intraperitoneal chemotherapy. *World J Gastrointest Surg* 2015; 7(3): 39-42 Available from: URL: <http://www.wjgnet.com/1948-9366/full/v7/i3/39.htm> DOI: <http://dx.doi.org/10.4240/wjgs.v7.i3.39>

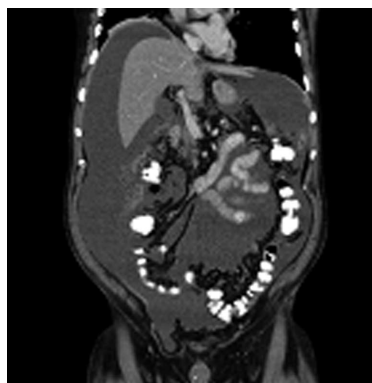


Figure 1 Abdominal computed tomography scan at the first presentation demonstrating voluminous ascites throughout the abdominal cavity.

INTRODUCTION

Malignant ascites (MA) is a pathologic accumulation of fluid in the peritoneal cavity caused by intraperitoneal disseminated cancer cells^[1,2]. About 40% of patients with peritoneal carcinomatosis (PC) secondary to colorectal cancer (CRC) develop MA^[3]. In these patients, progressive abdominal distention eventually causes debilitating symptoms such as pain, nausea, anorexia, vomiting, and fatigue. In addition, ascites may hinder patients' breathing, causing dyspnea^[4]. The presence of MA is considered to be a grave prognostic sign, and in many patients, treatment is aimed only at palliation of symptoms. However, the first-line therapy with diuretics and paracentesis has shown varying efficacy^[1,2]. Consequently, hyperthermic intraperitoneal chemotherapy (HIPEC) has been advocated as an alternative treatment for refractory ascites^[5-8].

The current report describes a patient with severe respiratory distress caused by MA from peritoneal colorectal carcinomatosis. The patient was successfully palliated using HIPEC.

CASE REPORT

A previously healthy 73-year-old man was admitted to a regional hospital with a 3-wk history of debilitating abdominal distention, obstipation, dyschezia, anorexia, and dyspnea. A computed tomography (CT) scan showed large amounts of ascites (Figure 1), a large rectosigmoidal mass with locoregional lymphadenopathy, and an omental cake, but no systemic metastases. These findings were highly suggestive of PC of colonic cancer. Biopsies taken during the colonoscopy confirmed the presence of a mucinous adenocarcinoma in the proximal rectum.

At the time of referral to our hospital, the patient was wheelchair bound and short of breath. A diagnostic laparoscopy was performed in order to determine the possibility of HIPEC with curative intent. The results revealed widespread peritoneal metastases (Figures 2 and 3) affecting all abdominal regions, adding up to a peritoneal cancer index of 34. Radical resection of all metastases was deemed impossible, disqualifying the patient from HIPEC with curative intent. To alleviate

symptoms, 10 L of ascitic fluid was drained, and a colostomy was performed for fecal diversion. The patient felt immediate relief, but a day later, recurrent fluid production caused severe respiratory distress. An ultrasound-guided paracentesis was performed, temporarily alleviating symptoms. However, ascites production remained unmanageable with the production rate of 10 L every 24 h. In an effort to stop the ascites production, a laparoscopic HIPEC without cytoreductive surgery, was performed. Saline was heated to 41–42 °C and perfused intra-abdominally, followed by administration of mitomycin C (35 mg/m²) circulating for 90 min. Postoperatively, the peritoneal cavity was drained with three catheters that were removed 48 h after surgery as per protocol. The postoperative stay was uneventful, and the patient was discharged after 12 d. The malignant ascites and resulting symptoms disappeared. Subsequent pathologic investigation confirmed the presence of a mucinous adenocarcinoma with signet cell differentiation in the peritoneal deposits.

Palliative chemotherapy (FOLFOX/bevacizumab) was started four weeks later. Recurrent ascites occurred 8 mo after the HIPEC. Ultrasound-guided paracentesis provided insufficient relief. Given the positive response to the initial HIPEC, this procedure was repeated with oxaliplatin as the intraperitoneal agent. The patient was still alive 16 mo after the diagnosis and continues to receive palliative chemotherapy.

DISCUSSION

Approximately 10% of CRC patients develop peritoneal cancer in the course of their disease^[9]. In a select group of patients, cytoreductive surgery and HIPEC are the treatment modality of choice, which offer long-term survival, or in some cases, a cure^[10]. These results can only be achieved when complete cytoreduction of all visible tumors is obtained^[9]. Consequently, patients unfit for major surgery, with systemic metastases or wherein complete cytoreduction cannot be achieved, have a dismal prognosis. In these patients, treatment is aimed at palliation of symptoms, including those caused by ascites.

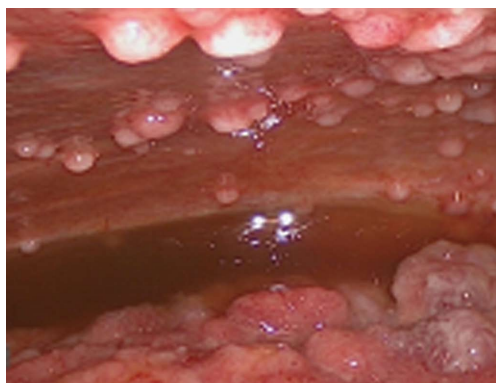


Figure 2 Intra-abdominal view showing ascites and confluence of tumor deposits.

MA is a common symptom in patients with PC^[1-3]. The pathophysiology of MA is multi-factorial and remains to be fully elucidated. The current view is that an increased vascular permeability and obstruction of lymphatic channels lead to the accumulation of fluid in the abdominal cavity^[1,2,11,12]. Ultrasound-guided paracentesis and fluid analysis are used to distinguish a benign origin from a malignant cause. CT may aid in the diagnostic work-up and reveal the primary source of malignancy^[2].

Several palliative treatment modalities can be used in the management of MA. Paracentesis alleviates abdominal distention and subsequent symptoms, yet improvements are short-lived, as ascites often reaccumulates within 72 h, as was the case in our report^[2]. Diuretic therapy appears to be effective in controlling MA when the serum-ascites albumin gradient is > 1.1 g/dL^[13]. Although diuretic therapy has been effective in patients with ascites due portal hypertension secondary to liver metastases, its use in patients with PC is likely to be less effective^[14]. Systemic chemotherapy for the treatment of ascites in CRC patients has not yet been assessed. However, MA usually presents itself in the terminal stage of disease when available chemotherapeutic regimens have already been deployed^[1]. Therefore, systemic chemotherapy is likely to play a minor role.

In patients with MA refractory to the first-line treatment modalities, HIPEC may provide symptomatic relief. In a case series by Valle *et al*^[6], 52 patients with PC-related ascites were treated with palliative HIPEC without cytoreductive surgery. This strategy appeared to be successful in all but one patient. As the survival is highly dependent on complete cytoreduction, the reported median survival of only 98 d is not surprising. Ideally, ascites caused by peritoneal cancer should be treated with complete cytoreduction and HIPEC. Unfortunately, Randle *et al*^[8] found that complete macroscopic reduction can only be achieved in 15% of MA patients. The presence of MA is, therefore, a grave prognostic sign, as it is indicative of incomplete cytoreduction after surgery and HIPEC and worse

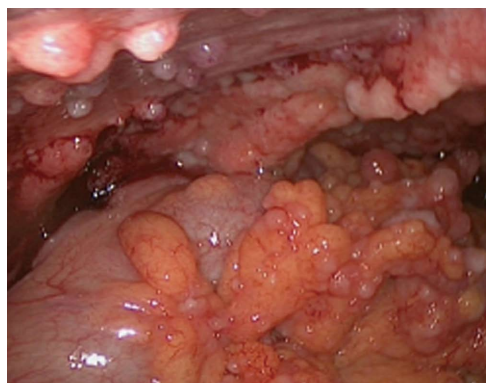


Figure 3 Intra-abdominal view of large tumor deposits.

overall survival. On the other hand, palliative HIPEC appeared to be highly successful in controlling MA, with 93% of patients being palliated even when complete cytoreduction was not possible. Both patient series suggest that HIPEC, without complete tumor debulking, can be a valid option for palliating MA, offering symptomatic relief with low complication rates and a short hospital stay^[6,8].

In conclusion, this case report describes the successful palliation of MA by HIPEC in an elderly patient with severe symptoms. Although the prognosis of patients not suitable for curative treatment is dismal, alleviating the debilitating symptoms such as MA with HIPEC as a sole procedure should be considered.

COMMENTS

Case characteristics

A previously healthy 73-year-old man presented with abdominal distention, dyspnea, obstipation, dyschezia, and anorexia.

Clinical diagnosis

Upon physical examination, the patient showed dullness to percussion over the abdomen and shallow breathing.

Differential diagnosis

Portal hypertension, peritonitis, portal vein occlusion, abdominal malignancy.

Imaging diagnosis

Computed tomography showed large amounts of ascites, a large rectosigmoidal mass with locoregional lymphadenopathy, and an omental cake, but no systemic metastases.

Pathological diagnosis

Biopsies taken during a colonoscopy and the pathologic investigation after a diagnostic laparoscopy confirmed the presence of mucinous adenocarcinoma with signet cell differentiation in the rectum and peritoneal deposits.

Treatment

The patient was treated with hyperthermic intraperitoneal chemotherapy without cytoreductive surgery.

Related reports

Two case series previously described similar cases, with palliation of ascites in the majority of patients.

Term explanation

Cytoreductive surgery refers to the removal of visceral organs and peritoneal surfaces in order to treat peritoneally metastasized cancer.

Experiences and lessons

Hyperthermic intraperitoneal chemotherapy without cytoreductive surgery should be considered when managing symptomatic malignant ascites, even when the prognosis is dismal.

Peer-review

This is case report about hyperthermic intraperitoneal chemotherapy in carcinomatosis can be reported because is a new tool for these patients.

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P- Reviewer: Boin IFCF, Martinez-Costa OH **S- Editor:** Ji FF
L- Editor: A **E- Editor:** Wu HL





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