

Colorectal cancer emergencies during pregnancy

Case Reports

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Summary

Colorectal carcinoma emergencies during pregnancy are exceptionally rare. Three women 38, 31 and 36 years old, in the third trimester of gestation received treatment, respectively, for acute abdomen due to perforation of rectal carcinoma, ileus due to a sigmoid tumor, and deep venous thrombosis (DVT) from a cecal tumor compromising the right iliac vein. In the first two patients urgent cesarean sections were carried out with Hartmann's procedure and a loop colostomy was performed to resolve the ensuing intraabdominal sepsis and ileus, respectively. In the third patient, a cesarean section was carried out to treat the underlying DVT more aggressively, while right colectomy was postponed for three weeks. Restoration of the alimentary tract was achieved two months later in the first case, while in the second and third cases total colectomy due to familial polyposis and right colectomy were performed three weeks after the cesarean section. An overview of the clinical features, diagnostic pitfalls and therapeutic approaches to manage complications of colorectal cancer during pregnancy are discussed.

Key words: Emergency; Cancer; Pregnancy.

Introduction

Carcinoma of the colon diagnosed during pregnancy is a very rare event with a reported incidence of 0.002% [1, 2]. According to Cappell [3] about 300 cases of colon cancer during pregnancy have been reported in the literature. The occurrence of this malignancy during pregnancy is associated with a very poor prognosis [4]. Delayed diagnosis due to pregnancy-associated gastrointestinal symptoms is a common feature, and metastatic spread, bowel obstruction and subsequent perforation are more prevalent during gestation [1]. In a review by Bernstein *et al.* [5] of 205 cases with colon cancer, the mean age of pregnant patients was 31 years, with a predominance of the rectum (86%). The increased incidence of rectal cancer during pregnancy may result from increased self referral and increased attention to rectal symptoms due to rectal compression by the enlarged uterus and increased physician detection because of frequent pelvic and rectal examinations during pregnancy. The aim of this study is to present our experience in the diagnosis and management of complicated colorectal cancer, discussing the pitfalls in diagnosis, the therapeutic modalities and the prognosis of this exceptionally rare entity.

Materials and Methods

The cases of three pregnant women who were admitted to our surgical department with large bowel emergencies are presented in this study. The clinical characteristics, treatment and outcome of the patients are depicted in Table 1.

In the first case, the patient was in the third trimester of pregnancy and was admitted for acute abdomen that rapidly pro-

gressed to generalized sepsis. Emergency exploratory laparotomy was performed and revealed peritonitis due to a perforated colon at the rectosigmoid junction. An urgent cesarean section was performed delivering a live and healthy fetus and a concomitant hysterectomy was carried out. The abdomen was washed out to eliminate contamination and after resecting the rectosigmoid, the descending colon was exteriorized as an end colostomy and the rectal stump was stapled (Hartmann's procedure). Adjuvant chemotherapy with fluorouracil (5-FU) and leucovorin was applied for a 6-month period and restoration of the continuity of the colon was performed thereafter. The patient has been free of recurrence or metastatic disease during a 3-year follow-up period.

In the second case, the patient was in the 31st week of pregnancy and was admitted with a clinical presentation of large bowel obstruction. Lower GI endoscopy revealed multiple polyps of the rectum. The patient underwent cesarean delivery and loop sigmoidostomy. Four weeks later a total colectomy and Brook ileostomy were performed. Histological analysis reported familial polyposis of the large bowel with multiple malignant foci. The patient received adjuvant chemotherapy with 5-FU and leucovorin. Lung metastases were detected after a year and a half during the patient's follow-up.

In the third case, the patient was in the third trimester of pregnancy and presented with a deep venous thrombosis of the right leg. A cesarean section was carried out and during abdominal exploration, a tumor of the cecum was incidentally detected so the decision to postpone surgical excision was taken. Three weeks later the patient underwent a right hemicolectomy, and cecal adenocarcinoma (Dukes C) was histologically reported. The postoperative course was complicated by pulmonary embolism and the patient died on the 15th postoperative day.

Discussion

Colorectal cancer during pregnancy poses a serious threat to both the mother and fetus. Woods *et al.* [6] reported that only 25 of 32 pregnancies in women with

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Table 1. — Characteristics of pregnant patients with colon cancer.

No.	Age	Gestational age (weeks)	Clinical presentation	Treatment	Outcome
1	38	36	Abdominal pain ¹ Acute abdomen Severe sepsis	- Cesarean section plus Hartmann's procedure - Restoration of the bowel 6 months later	Alive 3 years after
2	31	31	Ileus of large bowel Rectal bleeding Abdominal pain ¹	- Cesarean section plus loop sigmoidostomy - Total proctocolectomy 4 weeks later	Pulmonary metastases 1½ years after
3	36	38	Abdominal pain ¹ Deep vein thrombosis	- Cesarean section plus right colectomy	Death ²

¹: Non specific abdominal pain was persistent over the past two to three months; ²: Massive pulmonary embolism on the 15th postoperative day.

colorectal cancer resulted in healthy, live-born infants. Prematurity, intrauterine death, stillbirth, and termination were all contributors to the death of these infants.

In the same report, the incidence of colorectal cancer in pregnant women was one in 13,000. High-risk groups for colorectal cancer include patients with familial adenomatous polyposis coli [7], hereditary nonpolyposis colorectal cancer syndrome [8], long-standing inflammatory bowel disease [9], and those with an extensive family history of colon cancer [8]. These high-risk groups account for a small minority (5%-10%) of all colorectal cancer cases, but are more likely to be present in younger patients, including those in the age cohort in which pregnancies occur.

Pregnant women typically present with advanced colon cancer that unfortunately is usually the result of delayed diagnosis. Patients frequently postpone self-referral due to confusion about cancer symptoms with those of gastrointestinal changes appearing in every normal pregnancy. Colon cancer in pregnant patients presents similarly that in the general population. Abdominal pain, rectal bleeding, nausea, vomiting and abdominal distention are the most common symptoms [10, 11]. Symptoms depend on cancer size and location. The narrower left bowel lumen is amenable to obstruction, while distal cancers cause gross rectal bleeding rather than anemia, weakness and fatigue due to occult blood loss most commonly occurring in right-sided colon cancers [12].

There are common pitfalls in the clinical recognition of colon cancer during pregnancy that lead to a delayed diagnosis. From an epidemiological point of view, colon cancer is not generally considered in patients under 45 years of age. Pitfalls in evaluating patients' symptoms are weight loss usually masked by weight gain during pregnancy, rectal bleeding frequently attributed to hemorrhoids, altered bowel habits or constipation due to mechanical compression of the enlarged uterus, abdominal pain, weakness and fatigue, most common in the third trimester of gestation. Laboratory abnormalities including iron deficiency anemia, hypoalbuminemia, and alkaline phosphatase elevation commonly occur during pregnancy, although right-sided colon cancer, inanition from cancer and hepatic metastases should be excluded, respectively [3].

Diagnostic evaluation includes measurement of carcinoembryonic antigen (CEA), which has low sensitivity and specificity in screening patients for colon cancer. However, it is used as a baseline for comparison with postoperative levels, and an elevated preoperative level is a poor prognostic indicator: the higher the serum levels of CEA, the more likely the cancer to be extensive and to recur postoperatively [13]. Although abdominal imaging with computed tomography (CT) is standardly used in the general population to evaluate pericolonic extension and intraabdominal metastases, abdominal ultrasound for detection of hepatic metastases and abdominal magnetic resonance imaging (MRI) seem to be safer than and preferable to abdominal CT during pregnancy [14]. Partial colonoscopy or even flexible sigmoidoscopy seems to be relatively safe for the mother and the fetus, in order to obtain a pathologic diagnosis preoperatively and to exclude synchronous colonic lesions.

Surgery is the gold standard. The type and timing of surgery depends on gestational age, location of the tumor, possible complications ensuing during pregnancy and maternal preferences.

Colon cancer above the rectum can be treated with typical resections. Surgery during the first half of pregnancy can often be performed without removing the gravid uterus and disturbing the pregnancy [5]. When the cancer is diagnosed during the second half of pregnancy, cancer surgery should ideally be delayed until but not beyond the time that fetal viability is normally expected. When colorectal cancer emergencies (perforation, large bowel obstruction) occur during pregnancy, treating the complication with a concomitant resection of the colon cancer and primary anastomosis is the therapeutic strategy. In these urgent and possibly life-threatening situations, especially involving the first trimester, gestational termination should be discussed with the pregnant woman, while a cesarean section can be carried out if complications occur in the second half of gestation.

Rectal cancer during pregnancy is approached differently from cancer above the rectum. If cancer is diagnosed in the first half of pregnancy, gestational termination should be discussed. Moreover, a total abdominal hysterectomy is recommended to facilitate access to the rectum when needed for intraoperative exposure or when the cancer extends into the uterus [10, 15, 16]. When the cancer is unresectable, a colostomy is performed until the fetus becomes viable. When the cancer is diagnosed during the second half of pregnancy, cancer surgery should ideally be delayed until fetal viability is normally expected. Cancer resection is usually delayed for several days postpartum to permit involution of the uterus and resolution of pelvic vascular congestion to simplify the surgical approach and to decrease intraoperative bleeding [10]. Complications such as colonic obstruction, perforation or severe bleeding affect cancer surgery. Colonic obstruction or perforation requires urgent or emergency surgery. Staged procedures with colostomy or exteriorization are classically performed for obstructing carcinoma during pregnancy as in the general population. A

diverting colostomy may permit a pregnancy to continue until the fetus matures (31-32 weeks) and becomes viable, after which definitive surgery can be safely performed [17].

The poor prognosis is believed to result from the advanced pathologic stage at diagnosis because of delayed diagnosis during pregnancy. In the largest series of pregnant patients, survival from rectal and colon (above the rectum) cancer was 83% and 75% for Dukes Stage B, 27% 33% for Dukes Stage C and 0% and 0% for Dukes Stage D, respectively [18].

Conclusion

Colorectal cancer during pregnancy is a rare although aggressive malignancy with a poor prognosis. Complications, including bowel obstruction, perforation and severe bleeding present as surgical emergencies and should be faced on an individual basis and tailored to gestational age. An interdisciplinary approach between a gynecologist and a general surgeon is required. The key point is surgical treatment of rectal cancer, which poses technical difficulties due to lack of space from the gravid uterus and the high risk of intraoperative bleeding from hyper-vascularity.

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