

Pregnancy complicated with colon cancer: a case report and review of the literature

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Summary

Colorectal cancer in pregnancy is a rare disease and the authors present the case of a 29-year-old patient along with a review of the literature.

Key words: Colon cancer; Colorectal cancer; Pregnancy.

Introduction

Colorectal cancer in pregnancy is a rare disease with an incidence of 0.028/1000[1]. It is reported that the overall prognosis of colorectal cancer in pregnancy is poor, and the five-year survival rate is from 0 to 42% [2]. The possible reasons are clinical symptoms not obvious, clinical manifestations of colorectal cancer are similar to normal gastrointestinal diseases and the changes of hormones during pregnancy cause the rapid proliferation of tumor cells [3]. The authors present a case report of a patient with colon cancer in pregnancy and review the literature at the same time.

Case Report

A 29-year-old woman, previously healthy and with no significant family history of cancer, presented at 29⁺ weeks of gestation with hypogastrium pain and distension. The result of TORCH, during pregnancy, type I herpes simplex virus IgG was 111.6col. Abnormal ultrasound revealed that the lower margin of placenta was about 20 mm from the over edge of the mouth of the cervix. Ultrasonography showed placental distance from the lower edge of the mouth of the cervix was about 40 mm, with a cervical length of 27 mm. Routine fecal occult blood was negative, but the urine routine examination results included urinary protein 0.25 g/L and urinary microprotein 140 mg/L. Results of the blood test showed a hemoglobin of 99 g/L, platelet count $500 \times 10^9/L$, white blood cells $12.92 \times 10^9/L$, and neutrophil ratio of 84.5%. Fetal fibronectin and Group B Streptococcus both were negative. Considering the threatened abortion, the authors administered ritodrine hydrochloride 100 mg to the patient through intravenous infusion tocolytic therapy.

Second day after the start of treatment, the patient complained of abdominal pain and required withdrawal. The authors assessed amylase because of abdominal pain, and the results of examination were normal. Abdominal examination by ultrasonography

showed that the abdomen was full of gas, the right renal collecting system separation of about 11mm, but the pancreas was poorly delineated. Digestive physician advised to nasogastric tube decompression, and dynamic monitoring of urine ketone bodies, if abdominal pain aggravated, then the abdominal CT scan would be taken and rehydration would be strengthening to maintain water electrolyte balance. Ceftriaxone tazobactam could be used by intravenous for prevention of infection, and the dose would 2.0 g, once per day. At this time, the authors found that blood pressure was 138-165/65-95 mmHg, the stomach sound with percussion was drum-like, bowel was hyperactive with gurgling, and routine urine protein positive (++)

After repeated communication with patient and her family, the authors performed CT and electronic colonoscopy. To their surprise, the CT findings suggested colonic obstruction, thickening of the descending colon wall, nodular changes in the surrounding peritoneum, old lung nodules, and calcification in the liver. Colonoscopy examination showed that the descending colon had a prominent ulcer annular growth, occupying a large space of about 3×5cm in size, and a small amount of protruded surface on the ulcer. The electronic endoscope failed to pass the intestinal canal then biopsy was taken for pathological examination. Gastrointestinal tumor markers iron protein was 11.05 ng/ml, CEA 19.0 NG/ml, CA199 41.77 U/ml, CA125 38.3 U/ml, CA 724 300 U/ml, alfa fetoprotein 157.42 ng/L, CA 242 52.44, and Golgi protein GP73 78.9. Colonoscopy biopsy showed a descending colon mucinous adenocarcinoma. Reanalysis of the history of the patient, the patient complained about the frequency of defecation that had decreased a week ago, but there was no other gastrointestinal symptoms. Repeated consultation with patient and her families, they accepted immediate termination of pregnancy, and resection of colon cancer.

By the chosen voluntarily of patients and her family, the authors performed a cesarean section and resection of the colon tumor. Neonatal weight was 1600 grams, Apgar score 7-9 points, and then was transferred to the neonatal department for further treatment. During the operation, the authors found the descending colon reached 10 cm in diameter of a solid mass. The tumor invaded the entire wall of the intestinal wall and blocked the bowel

cavity, resulting in complete obstruction of the intestine. The proximal colon and ileum were markedly dilated, and a large number of fecal accumulated in the intestinal cavity. The mesenteric lymph nodes were seen clearly. In the left appendix, tumor metastasis diameter was about 6 cm and the mass was stiff. Abdominal, pelvic, large omentum, colon and its mesentery, empty ileum, and its membrane were observed in a wide range of metastatic nodules of varying sizes. The liver, gallbladder, stomach, and spleen were free of tumor invasion. Intraoperative rapid freezing suggested descending colon signet ring cell carcinoma, left adnexal metastatic or invasive poorly differentiated carcinoma, and greater omentum metastatic carcinoma.

Postoperative pathological analysis confirmed mucinous adenocarcinoma and some cells showed signet ring; the tumor infiltrated the entire layer of the colon wall up to the fibrous fat tissue outside the serosa. Around the mass, the edge of the distal and proximal were ten nodules, 17 and five pieces, respectively. The left accessory and greater omentum were involved in the carcinoma tissues and the histologically poorly differentiated. A tumor thrombus was seen in the vasculature, but the nerve tube and the margin had no cancer cells. The total number of lymph nodes around two pieces were seen in cancer metastasis. Pathological staging was PT4bN2bM1b IVB.

Discussion

Colon cancer during pregnancy is a rare disease. The clinical staging is often late, which often leads to poor prognosis of patients, and is associated with distant metastasis. The common type of metastasis includes mucinous tumor transfer to ovarian metastasis, liver metastasis, etc. Possible explanation for this observation include delayed diagnosis due to the similarity between the symptoms of colon cancer and the normal gastrointestinal manifestations of pregnancy [3, 4].

Although it is uncommon, the incidence of colon cancer complicating pregnancy is increasing [5]. There is no difference in stage at diagnosis or survival for patients with colon cancer during pregnancy, although long-term survival for colon cancer is poor in general [6]. In clinical treatment, doctors, patients, and their families all face very difficult decisions, and priority is given to maternal survival and not to the fetus.

Iatrogenic prematurity is the most common pregnancy complication in associated with malignancy because many of these infants are delivered early to facilitate the treatment of mother [5]. Overall, pregnancy associated with cancer survival is generally good and does not differ from that of non-pregnant patients, but colorectal cancer in pregnancy has an overall poor prognosis with a five-year survival rate ranging from 0 to 42 % [2].

Intestinal tumor during pregnancy may be challenging because many symptoms of malignancy, including nausea, anemia, and fatigue, are common and normal in pregnancy and atypical clinical symptoms of intestinal tumor are easily masked by clinical manifestations of pregnancy. The patients have no typical symptoms of gastrointestinal disease, and hospitalization occurs only because of abdominal pain.

The only symptom revealed was a decrease in stool for one week, and examination confirmed hyperactive bowel sounds, showing bowel obstruction. During hospitalization on the second day, the patient felt abdominal discomfort, and on the third day the symptoms significantly increased. The adverse reaction of ritodrine hydrochloride included gastrointestinal reaction. After stopping the treatment and detaining the stomach tube, to the authors' surprise, the patient's abdominal distension symptoms did not disappear, on the contrary, the distension symptoms improved and there was a manifestation of vomiting, accompanied by abdominal pain.

During pregnancy, workup and staging procedures are often modified to minimize radiation exposure [5]. When necessary, radiographs should be minimized and accompanied by fetal shielding. Radiation exposure limits vary between sources, but generally, less than 5 rad of cumulative dose is considered safe [6]. CT should be avoided when possible because it typically involves significant radiation exposure. When necessary, CT should be performed without contrast [7, 8]. Ultrasound is safe in all trimesters and is useful to evaluate the liver, spleen, pancreas, and kidneys. Abdominal ultrasound examination showed that the abdomen was full of gas, the right renal collecting system separation was about 11 mm, but the pancreas was unclear. MRI is believed to be safe after the first trimester [9]. The patient received CT and gastrointestinal tumor markers' assessment. CT examination result showed colonic obstruction, descending colon wall thickening, occupying nodular degeneration of peritoneum around descending colon, and old calcification of right lung and liver. These can cause nausea, vomiting, and abdominal pain, but whether the colon tumor is malignant or benign cannot be ascertained. Colonoscopy with biopsies are required and are safe in pregnancy [10]. In order to reach a definitive diagnosis, the authors gave the patient an electronic colonoscopy, with the consent of the patient and her family. Through the electronic colonoscopy the authors discovered a descending colon cyclic growth with a large uplift occupying about 3×5cm, and the surface of uplift occupied inflammatory exudation. To their surprise, the patient had no symptoms of preterm birth due to colonoscopy.

Radiation therapy in pregnancy is usually avoided. The chemotherapeutic agents are often necessary during pregnancy, despite the potential teratogenic risks. Surgery should be ideally performed in the second trimester, avoiding organogenesis in the first trimester and concerns of caval compression in the third trimester [5, 11]. With regards to the choice of anesthesia, if cesarean section is performed, the local anesthesia is better than general anesthesia [12]. If fetal heart tones changes intraoperatively, the patient can be placed in a left lateral tilt, ensuring adequate blood pressure which may help improve fetal status. Clinical judgment must prevail in each specific situation; if these interventions do not improve fetal status.

The risk of chemotherapy is clear, it may lead to miscarriage, fetal growth restriction, fetal distress, fetal malformation, and other adverse outcomes [13]. Early pregnancy, the first trimester, is an important stage of fetal organ formation and development, and chemotherapeutic risks to the fetus are highest during organogenesis. Therefore, if the delay of chemotherapy does not affect the survival of the pregnant women, it should be deferred until after the first trimester [13, 14]. During chemotherapy, the changes of tumor should be monitored continuously [2]. For the present patient, surgical treatment was still considered before the pathological type as the clinical stage of the patient was uncertain. The patient, after consultation with her family, requested immediate cesarean section and colon tumor resection. Postoperative pathology showed mucinous adenocarcinoma and included some signet ring cell carcinoma. Pathological staging was PT4bN2bM1b IVB. In the advanced cancer patient, further chemotherapy was required and unfortunately the patient was lost follow-up and did not complete the next treatment. In addition, the placenta in any patient with known malignancy should be sent for pathologic evaluation [15], but this patient's placental had not been sent to pathological examination during the operation, leading to unclear presence of placental metastasis. The mother and newborn at discharge were in good condition, without any abnormalities.

Conclusions

When a pregnant woman is diagnosed with colon cancer, multiple challenged questions arise. Clinician priority must be for the health and survival of the woman, but the safety of the fetus should also be considered.

Regarding imaging diagnostic choice in pregnant women, the priority should be the one which has less impact on fetuses, such as ultrasound and MRI. If it requires the use of other imaging techniques, exposure to the fetus should be minimized. With regards to treatment, surgery can be carried out at any gestational stage, chemotherapy prescribed as far as possible to the second or third trimester, and radiation treatment should be avoided. Pregnancy associated with colon cancer often leads to iatrogenic prematurity, but the prognosis is generally good at follow-up. Nonetheless, the most important point of care should focus on maternal survival and optimal care for the pregnant women with colon cancer and requires a multidisciplinary team. When focusing on maternal treatments, the impact on the fetus should be minimized as much as possible.

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