CASE REPORT

A Review of the Literature, the Detection and Treatment of Colorectal Cancer during Pregnancy: A Case Study!

Mirza Faraz Saeed[1], Taima Almubarak[2], Sara Khalaf[3], Ahmet Aslan[4], Isam Mazin Juma[5]

Received on: 02 September 2023; *Accepted on:* 04 October 2023; *Published on:* 22 December 2023

Abstract

Background: Colorectal cancer (CRC) during pregnancy is rare and presents diagnostic and therapeutic challenges.

Aim: This case report focuses on a patient who presented with colorectal cancer during pregnancy.

Case description: A 45-year-old female primigravid, pregnant woman, in the 20th week of gestation presented with complaints of multiple episodes of bloody diarrhea and tenesmus for the past 3 weeks. This was accompanied by poor appetite and weight loss (15 kg) since the onset of pregnancy. The patient also complained of lower back and abdominal pain. Investigations confirmed an obstructing rectosigmoid mass (15 cm) that could not be passed. The patient's pregnancy was terminated, and chemotherapeutic treatment was initiated.

Clinical significance: With the clinical manifestations of CRC during pregnancy being non-specific, tumors are usually discovered at an advanced stage. This poses a challenge for physicians to treat such cases. This case contributes to the growing literature on pregnancies complicated by CRC and highlights the importance of high clinical suspicion and the need for a multidisciplinary team in tailoring treatment regimens in accordance with patient-centered care.

Conclusion: This case report highlights the rarity of colorectal cancer during pregnancy and the challenges faced in the diagnoses and treatment.

Keywords: Case report, Colorectal cancer, Diagnosis, Pregnancy, Treatment.

Euroasian Journal of Hepato-Gastroenterology (2023): 10.5005/jp-journals-10018-1398

Background

The occurrence of colorectal cancer (CRC) during pregnancy is rare, with an estimated incidence of 1:13,000. The incidence rate of CRC is increasing in patients under 50 years old, as demonstrated by Vuik et al.[1] Symptoms of CRC, such as abdominal pain, vomiting, and altered bowel movements, mimic those of pregnancy. This consequently makes the diagnosis of CRC a challenge, with cases often being diagnosed with advanced stages of the disease.[2,3] Treatment is complicated by the many factors to be considered before commencing treatment. These include tumor stage and location, gestational age of pregnancy, and the impact of treatment on the unborn fetus and mother.[3,4]

This report pertains to the case of a 45-year-old woman diagnosed with rectal adenocarcinoma at 20 weeks of pregnancy. This report discusses the clinical manifestations and the process of the challenging diagnosis and treatment of CRC in pregnancy.

Case Description

A 45-year-old primigravid 20-week gestation female presented in early 2023 with multiple episodes of bloody, watery diarrhea (15 times per day) and tenesmus for the past three weeks. She reported poor appetite and 15 kg weight loss during her pregnancy, with her baseline weight being 73 kg and presenting at 58 kg. She also complained of lower back and abdominal pain, and vomiting. Examination revealed a palpable rectal mass 7 cm above the anal verge. Past surgical history is significant for a gastric bypass sleeve surgery 7 years prior, and breast augmentation two years earlier. Medications included Aspirin, Pexalon, and Duphaston. Pregnancy was obtained after successful *in vitro* fertilization. Family history was also significant for grandfather with lung cancer. Investigations done included physical examination, labs, and radiologic and pathological studies. Laboratory studies revealed an Hb level of 8.9 gm/dL, hematocrit (HCT) 27%, and mean corpuscular volume of 82.6 fL. Additionally, the patient had reduced serum calcium and creatinine levels of 1.98 and 31.7 mmol/L, respectively, and very elevated CA19-9 of 235.0 U/ml and CEA of 617.2 ng/mL. Liver function tests were normal apart from reduced total protein (48.7 gm/L), albumin (28.3 gm/L) and alanine aminotransaminase (7.0 U/L).

Radiological studies included magnetic resonance imaging (MRI) of abdomen and pelvis without contrast, and sigmoidoscopy with biopsy (Fig. 1).

[1,5]Department of General Surgery, King Hamad University Hospital, Muharraq, Bahrain

[2,3]Royal College of Surgeons in Ireland, Medical University of Bahrain, Busaiteen, Bahrain

[4]Department of Radiology, King Hamad University Hospital, Muharraq, Bahrain

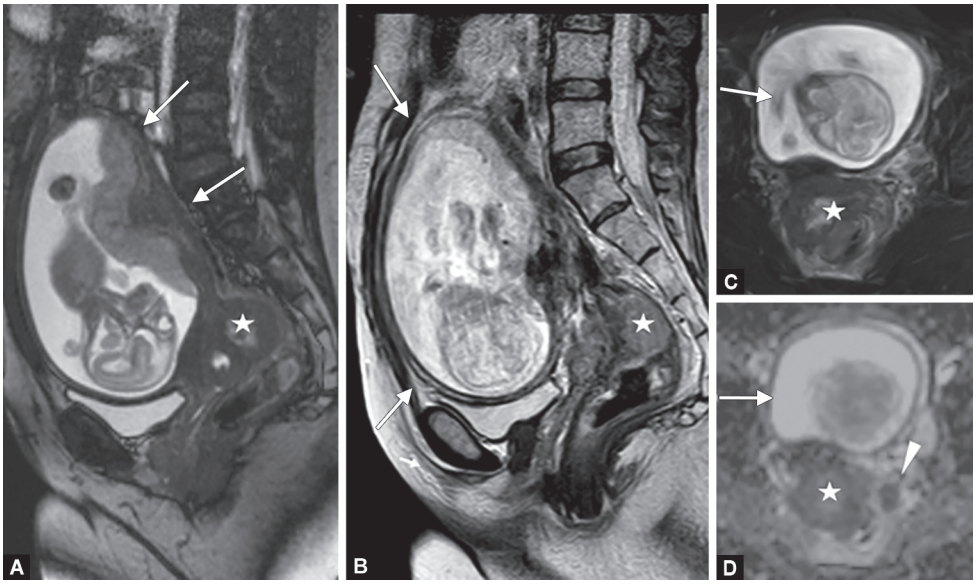
Corresponding Author: Mirza Faraz Saeed, Department of General Surgery, King Hamad University Hospital, Muharraq, Bahrain, Phone: +00 97333680898, e-mail: drmirzafaraz@yahoo.co.uk

How to cite this article: Saeed MF, Almubarak T, Khalaf S, *et al*. A Review of the Literature, the Detection and Treatment of Colorectal Cancer during Pregnancy: A Case Study! Euroasian J Hepato-Gastroenterol 2023;13(2):159–162.

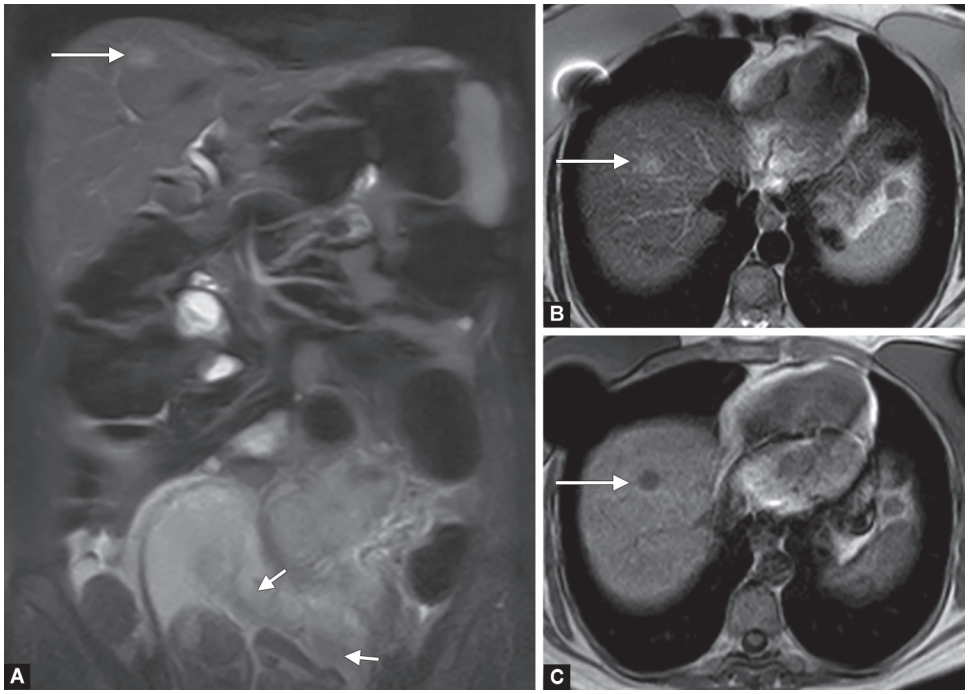
Source of support: Nil

Conflict of interest: None

Patient consent statement: The author(s) have obtained written informed consent from the patient for publication of the case report details and related images.



Figs 1A to D: Sagittal T2 (A and B), axial T2 (C), and axial ADC map (D) show an upper rectum mass (white stars) with mesorectal enlarged lymph nodes (arrowhead in D) at a pregnant patient (white arrows show placenta and fetus on images A and B)



Figs 2A to C: Coronal T2 (A), axial T2 (B), and axial T1 (C), demonstrate a metastatic liver lesion at segment 8 (white arrows). Viable fetus is seen on coronal T2 (short arrows)

Sigmoidoscopy without preparation was done and revealed a low rectal tumor with ulceration, 5 cm proximal to the anal verge. The rest of the colon was not assessed; however, small hemorrhoids were noted on the anal canal. A biopsy was taken which confirmed the presence of a moderately differentiated, myoinvasive adenocarcinoma.

Magnetic resonance imaging obtained shortly after showed an exophytic mid-part rectal tumor measuring 5.2 × 4 × 3.6 cm with central necrosis at the right wall extending to mesorectal fat and fascia. The tumor's placement was indenting the cervix and displacing it to the right. Magnetic resonance imaging also revealed multiple enlarged mesorectal lymph nodes measuring 7–12 mm on the lateral side and one in contact with mesorectal fascia, as well as three liver metastatic lesions. Additionally, a small hyperintense area was noted on the center of the lesion, about 10 cm proximal to the anal verge (Fig. 2).

Given the urgency and complexity of the case, a proposed initial patient management plan was assessed by the Gynecology

and Surgery team. A joint meeting was held with the family on and they were informed about the diagnosis and prognosis and given the following options with regards to proceeding with treatment.

- Terminate the pregnancy and start chemotherapy.
- Wait until fetus viability, proceed with delivery followed by administration of systemic chemotherapy.
- Continue the pregnancy and start chemotherapy.

Given that delay of management will have definitive deleterious effects on disease control and the patient's survival, the second option was discarded. And since exposing the fetus to chemotherapy has a high risk of definitive tetragonality, the family decided to continue with the first option—terminating the pregnancy and starting the patient of chemotherapy. Agreeing to move forward with this decision was in accordance with the Ethical Committee.

After the pregnancy was terminated, a whole-body positron emission tomography/computed tomographic (CT) scan with contrast was done under the indication of identifying further metastases. The report concluded multiple hypermetabolic nodal, peritoneal, and hepatic deposits alongside the hypermetabolic primary rectal tumor. Additionally, another hypermetabolic necrotic mass was appreciated involving the distal aspect of the descending colon with adjacent mesentery.

As such, another coloscopy was done that revealed an obstructing rectosigmoid mass at 15 cm that could not be passed.

A decision was made to remove part of the sigmoid colon out for loop colostomy.

The patient is currently receiving chemotherapy and is responding.

Discussion

The occurrence of CRC in pregnancy is rare, estimated at 0.002%.[5] According to literature, most tumors occur in the rectum or sigmoid colon. At the time of diagnosis, the cancer is often at an advanced stage.[2,5–7]

Most patients diagnosed with CRC during pregnancy have already metastasized tumors. The main difficulty in diagnosing CRC is the shared common symptoms between pregnancy and those pertaining to the presence of a lesion. Common clinical manifestations during CRC include rectal bleeding, anemia, nausea, vomiting, constipation, and abdominal pain. Both constipation and abdominal pain are common during pregnancy and are attributed to increased uterine compression or slowed bowel movements. Rectal bleeding during pregnancy is commonly due to hemorrhoids or anal fissures, which are both benign clinical diagnoses. Over the course of a pregnancy, weight should increase. However, it is not uncommon for some women to lose weight during the first trimester. As weight loss is also a symptom of CRC, this also contributes to the delay or absence of a CRC diagnosis in a pregnant patient until further along the pregnancy.[8]

The gold standard for diagnosing CRC is colonoscopy with biopsy. It has a high specificity and sensitivity index and allows for the opportunity to detect both cancerous and precancerous lesions across the large bowl and subsequently resect them. Colonoscopy is the definitive examination when other screening tests are positively demonstrated.[9] Colonoscopy is relatively safe during pregnancy and may be performed during the second trimester if highly indicated.[10] That said, the main difficulty in diagnosing CRC in pregnancy is the masking of CRC-related symptoms under normal, physiologic adaptations to pregnancy. This contributes to a late diagnosis.

Patients with gastrointestinal symptoms during pregnancy should undergo a detailed abdominal physical examination which could reveal evidence of an abdominal mass. Imagining such as ultrasound, X-ray, MRI, and sigmoidoscopy is relatively safe during pregnancy. Imaging with ionizing radiation such as CT and radioisotope scanning may have negative effects on the fetus and are best avoided. Patients with suspected CRC should be considered for rectal sigmoidoscopy, ideally after the second trimester. Although it has low accuracy for detecting colonic and rectal masses, ultrasound is specific in detecting liver metastases. Magnetic resonance imaging is preferable to CT to assess other pelvic and abdominal cavity lesions during pregnancy.[8]

In the presenting case, the patient sought medical attention complaining of abdominal pain, vomiting, loose bowel motion, tenesmus, and weight loss. Tumor markers CEA and CA-19-9 were significantly elevated. Initially, a sigmoidoscopy without preparation was done, which revealed a low rectal tumor with ulceration. Biopsy proved it to be a moderately differentiated, myoinvasive adenocarcinoma. Further MRI of abdomen and pelvis without contrast revealed liver metastatic lesions and enlarged mesorectal lymph nodes.

The treatment for primary carcinoma of the rectum during pregnancy is dependent on the stage of pregnancy, tumor stage and location, and associated complications. There is no recognized standard treatment. Yang et al.'s study recommends termination of the pregnancy followed by surgery if the tumor is found within 20 weeks of pregnancy, to prevent disease progression. If the patient was diagnosed after 20 weeks of pregnancy, treatment can be delayed to 32 weeks of gestation to save the fetus.[2] McLean et al.'s study suggests that early or presumably curable tumors diagnosed between the 20th and 27th week of pregnancy should be treated by immediate hysterotomy and resection. If the tumor was diagnosed after the 27th week, treatment can be delayed to cesarean section at 32 weeks with resection of the tumor.[11]

According to literature, most rectal cancers are diagnosed in the second or third trimester of pregnancy.[12,13] These patients are often diagnosed with stage 3 or 4 tumors and have a subsequently poor prognosis.[2,7] Treatment usually requires neoadjuvant chemoradiation prior to surgical tumor resection. However, chemotherapy and radiation are both teratogens. In this report, the patient had locally advanced rectal adenocarcinoma with evidence of metastasis to the liver (T3dN2M1). Given the patients urgency, a multidisciplinary team meeting was held among the surgical and gynecological department and the family were presented with multiple treatment approaches. Ultimately, the family decided to terminate the pregnancy and proceed with systemic chemotherapy. Other options included continuing the pregnancy and starting chemotherapy which would expose the fetus to definitive teratogenicity. Otherwise, the family members were also given the option of waiting until fetus viability to deliver the baby and start systemic chemotherapy. This option was discarded as delaying management would have inevitable harmful effects on disease control and patient survival. The decision to move forward with aborting the pregnancy and starting chemotherapy was in accordance with the Ethical Committee.

Pellino et al.'s review of CRC during pregnancy, reported that from the 119 patients studied in 79 papers, average survival of the mother was 36 months.[12] Kocián et al.'s review reported the mother's one year survival rate to be 78.1%.[13]

Clinical Significance

Colorectal cancer during pregnancy presents as a challenge for physicians, with non-specific clinical manifestations that overlap symptoms of pregnancy. As a result, tumors are usually discovered at an advanced stage. This complicates the treatment of CRC. This case contributes to the growing literature on pregnancies complicated by CRC and highlights the importance of high clinical suspicion and the need for a multidisciplinary team in tailoring treatment regimens in accordance with patient-centered care.

Conclusion

In conclusion, although rare, the rate of CRC during pregnancy is increasing. The main challenge in diagnosing CRC during pregnancy is the shared common symptoms. It is therefore imperative for clinicians to have a high suspicion index, especially if there is evidence of positive family history.

This case highlights the diagnostic challenge and the myriad of ethical issues surrounding the treatment and management of malignancies in pregnancy.

Orcid

Mirza Faraz Saeed https://orcid.org/ 0000-0002-0343-2146
Sara Khalaf https://orcid.org/0009-0001-9238-6443
Isam Mazin Juma https://orcid.org/ 0000-0003-4470-677X

References

1. Vuik FE, Nieuwenburg SAV, Bardou M, et al. Increasing incidence of colorectal cancer in young adults in Europe over the last 25 years. Gut 2019;68(10). Available at: https://gut.bmj.com/content/68/10/1820. Accessed on: 20 August 2023.
2. Yang H, Han X. Colorectal cancer in pregnancy: A case report and literature review. J Gastrointest Oncol 2021;12(2):885–891. DOI: 10.21037/jgo-21-31.
3. Cao S, Okekpe CC, Dombrovsky I, et al. Colorectal cancer diagnosed during pregnancy with delayed treatment, Cureus 2020;12(5):e8261. DOI: 10.7759/cureus.8261.
4. Salani R, Billingsley C. Cancer and pregnancy: An overview for obstetricians and gynecologists. Am J Obstet Gynecol 2014;211(1): 7–14. DOI: 10.1016/j.ajog.2013.12.002.
5. Ossendorp RR, Silvis R, van der Bij GJ. Advanced colorectal cancer resulting in acute bowel obstruction during pregnancy; A case report. Ann Med Surg 2016;8:18–20. DOI: 10.1016/j.amsu.2016.04.018.
6. Toosie M, Moaddabshoar L, Hosseini S. Rectal cancer in pregnancy: A diagnostic and therapeutic challenge. J Egypt Natl Cancer Inst 2014;26(3):175–179. DOI: 10.1016/j.jnci.2014.03.003.
7. Khodaverdi S, Kord Valeshabad A, Khodaverdi M. A case of colorectal cancer during pregnancy: A brief review of the literature. Case Rep Obstet Gynecol. 2013. DOI: 10.1155/2013/626393.
8. Yang H, Han X. Colorectal cancer in pregnancy: A case report and literature review. Gastrointest Oncol 2021;12(2):885–891. DOI: 10.21037/jgo-21-31.
9. Issa IA, Noureddine M. Colorectal cancer screening: An updated review of the available options. World J Gastroenterol 2017;23(28): 5086–5096. DOI: 10.3748/wjg.v23.i28.5086.
10. Cappell MS, Fox SR, Gorrepati N. Safety and efficacy of colonoscopy during pregnancy: An analysis of pregnancy outcome in 20 patients. Med 2010;55(3–4):115–123.
11. McLean DW, Arminski TC, Bradley GT. Management of primary carcinoma of the rectum diagnosed during pregnancy. Am J Surg 1955;90(5):816–825. DOI: 10.1016/0002-9610(55)90705-4.
12. Pellino G, Simillis C, Kontovounisios C et al. Colorectal cancer diagnosed during pregnancy: Systematic review and treatment pathways, European journal of gastroenterology & hepatology. 2017;29(7):743–753. DOI: 10.1097/MEG.0000000000000863.
13. Kocián P, de Haan J, Cardonick EH, et al. Management and outcome of colorectal cancer during pregnancy: Report of 41 cases. Acta Chir Belg 2019;119(3):166–175. DOI: 10.1080/00015458.2018.1493821.