

## Colon Cancer during Pregnancy

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### Background

The incidence of cancer during pregnancy is approximately 1 in 1000. The most common types encountered during pregnancy are cervical, breast and ovarian. About 3,000 women are diagnosed with breast cancer in the United States while they are pregnant<sup>1</sup>. Approximately 275 cases of colon cancer associated with pregnancy have been reported in the literature<sup>2</sup>. Management of malignancy during pregnancy is challenging, requiring a balance of concern for maternal survival and fetal health and well-being. The symptoms of colorectal cancer include nausea, vomiting, abdominal pain, altered bowel movements, and rectal bleeding. Since some of these symptoms are commonly found in the pregnant population as a whole, physicians and patients usually attribute them to the usual manifestations of pregnancy without an appropriate evaluation. The delay in initiating the workup for the symptoms related to colorectal cancer is a major contributing factor to the poor prognosis associated with this disease<sup>3-4</sup>. The management plan, which may require induced abortion, is determined by the stage of pregnancy and the predicted behavior of the cancer. Presented here is the medical history of a patient having a colon cancer during pregnancy and the treatment offered

### Case presentation

A 36 year old female at 25 weeks gestation presented to the clinic complaining of one month duration of abdominal pain, flatulence and a one year history of intermittent bloody stool. She underwent a colonoscopy which revealed a cecal mass. Biopsy of the mass was consistent with an adenocarcinoma of colon primary. Pre-op CEA and CA 19-9 were within normal limits. U/S of the abdomen was unremarkable. She also underwent a fetal U/S and the fetus appeared to be progressing normally. She underwent a laparotomy and an extended right hemicolectomy in July 2010. The final pathology was moderately differentiated adenocarcinoma of the colon, staged as pT3, pN2; (8/35 LN +). All margins were clear. A left ovarian biopsy was performed and was unremarkable and the right ovary was not visualised.

She was started on 5-Fluorouracil/Folinic acid as per the Rosewell Park regimen/ weekly for 6 weeks, completing 1 cycle without any complications. This was followed by a c-section at 34 weeks of gestation. She delivered a healthy baby

boy, Apgar score of 9, 9, 10 at 1/5/10 minutes with birth weight of 1.970 kg. Regular follow up of the baby showed no problems and weight has increased to 6.30 Kg in May 2011.

After recovery from surgery, she was treated with the XELOX regimen (Capecitabine 1000 mg/m<sup>2</sup> bid for 14/21 days and Oxaliplatin 130 mg/m<sup>2</sup> every 3 weeks). She completed 7 cycles in March of 2011 without complications. Colonoscopy, CT scan and CEA done post completion of treatment were normal.

### Discussion

As she had Stage III disease which put her at a high risk for recurrence/metastases, adjuvant chemotherapy was required, but since she was pregnant, this posed a challenge in the regimen to be used during her pregnancy. Our patient was made aware about the risk involved with the administration of 5-Fluorouracil during pregnancy which is about 7%. There have been a few cases of Fluorouracil administration during pregnancy and it appears to be relatively safe in the 3rd trimester. Oxaliplatin has been assigned to pregnancy category D by the FDA<sup>5</sup>. Animal studies have revealed developmental abnormalities, mortality and delayed growth with small doses. Oxaliplatin may also cause fetal harm when administered to a pregnant woman. There are no adequate and well-controlled studies of Oxaliplatin usage in pregnant women as such we opted to use 5-Fluorouracil/Folinic acid until post-delivery then add Oxaliplatin.

### Conclusion

For cancer diagnosed during the first trimester, the fetus is most susceptible to the teratogenic effects of x-rays and chemotherapeutic agents. This is also associated with spontaneous abortion. A long delay in the treatment of cancers is unacceptable and may put the patient at high risk of metastases/death therefore recommendations for the termination of the pregnancy must be considered especially in the 1<sup>st</sup> trimester, while chemotherapeutic agents have been successfully used in the second and the third trimester. Plain radiographs and abdominal CT scans pose some risk to the fetus at the early stages of pregnancy. With increasing experience with abdominal MRI, this is becoming the recommended imaging modality for pregnant women with a gastrointestinal malignancy<sup>5</sup>.

Pregnant women with colorectal cancer generally have a poor prognosis. In a review of 42 patients with colorectal cancer above the peritoneal reflection, Chan et al<sup>7</sup> noted that 23 (56%) of these patients died by the time the cases were reported in the literature. Most died within 1 year of being diagnosed, and the median survival for the group was less than 5 months, there were no stages defined in the literature. One patient survived for 3.5 years after bowel resection but had multiple recurrences. No patient with colorectal cancer in pregnancy reported in the literature has survived longer than 5 years.

In patients in the 2nd and 3rd trimesters of their pregnancy, they should be allowed to proceed to a full term pregnancy with vaginal/c-section delivery without interference or delay in their treatment. In cancers discovered during the 1st trimester of pregnancy, treatment may either be delayed to the 2nd trimester or termination of the pregnancy should be considered. In this setting, the patient's willingness to keep the pregnancy plays a major role in the treatment decision.

### Abbreviations

CEA: carcinoembryonic antigen; CA 19-9: cancer antigen 19-9; CT: computed tomography.

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