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Malignancies in pregnancy

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Malignancy complicating pregnancy is fortunately rare, affecting one in 1000 to one in 1500 pregnancies. Optimal treatment involves balancing the benefit of treatment for the mother while minimizing harm to the fetus. This balance is dependent on the extent of the disease, the recommended course of treatment, and the gestational age at which treatment is considered.

Both surgery and chemotherapy are generally safe in pregnancy, whereas radiation therapy is relatively contraindicated. Iatrogenic prematurity is the most common pregnancy complication, as infants are often delivered for maternal benefit. In general, however, survival does not differ from the nonpregnant population.

These patients require a multidisciplinary approach for management with providers having experience in caring for these complex patients. The aim of this review was to provide an overview for obstetricians of the diagnosis and management of malignancy in pregnancy.

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Introduction

Cancer in pregnancy is, fortunately, rare. However, when a woman is diagnosed with cancer during her pregnancy, many complicated questions arise. The underlying dilemma to which all other questions can be traced is how best to balance the health of the mother with the health of her unborn child. Every woman, partner, and family is likely to have a different viewpoint on this underlying dilemma,

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making these questions, at times, extraordinarily complex. Once the diagnosis of cancer in pregnancy is established, the patient should be referred to an institution with experience in dealing with such cases, where she can receive multidisciplinary care by a team whose main objective was to guide and support care decisions that reflect the wishes of the woman and her support system.

The aim of this review was to give clinicians a framework for how to approach some of these complex issues, with a focus on how the pregnancy affects cancer progression and treatment, and, conversely, how cancer progression and treatment affect the pregnancy.

Epidemiology of cancer in pregnancy

Cancer affects approximately one in 1000 to one in 1500 pregnancies [1,2]. This estimate is an increase from one in 2000 in 1964 [3], and it is thought to reflect not only higher rates of cancer in general but also a delay in childbearing to the third or fourth decades of life by an increasing number of women [4]. The most common cancers that occur concurrent with pregnancy include hematologic malignancies, breast cancer, thyroid cancer, colon cancer, cervical cancer, ovarian cancer, and melanoma (Table 1). Pathologic features and prognosis of patients diagnosed during pregnancy are usually comparable with age- and stage-matched nonpregnant patients [5].

Diagnosis of cancer in pregnancy

Prompt diagnosis of cancer is paramount to successful treatment regardless of pregnancy status. Unfortunately, the diagnosis of cancer in pregnancy is often delayed. Diagnosis during pregnancy is complicated by the fact that many symptoms of malignancy are similar to symptoms of pregnancy, including nausea/vomiting, breast changes, abdominal pain, anemia, and fatigue. Breast changes and the gravid uterus may make the physical examination of a pregnant woman difficult. In addition, clinicians may be more hesitant to order the appropriate tests because of concerns that laboratory results may be inaccurate or that radiologic testing is harmful.

Laboratory testing

The physiologic changes of pregnancy and the accompanying alterations in commonly used laboratory values may complicate the diagnosis of malignancy (Table 2). For example, hemoglobin and hematocrit levels are typically lower, and alkaline phosphatase and lactate dehydrogenase (LDH) are usually higher during pregnancy.

Many specific tumor markers are also impacted by pregnancy, and therefore they are either not useful or are not as predictive as in the nonpregnant population. Ovarian cancer antigen 125 (CA-125) concentrations have been shown to be elevated in the first trimester with wide variation between weeks 5 and 8, normalize during the second and third trimesters, rise again immediately after delivery, also with wide fluctuations, and generally do not return to baseline until 10 weeks postpartum [19,20]. More recently, the concentration of the biomarker human epididymis protein 4 (HE4) was found to be lower in pregnant women when compared with nonpregnant, premenopausal women [21]. Other markers whose levels, and thus clinical utility, may be altered by pregnancy include human chorionic

Table 1
Epidemiology of cancer in pregnancy.

Type of Malignancy	Incidence in Pregnancy (per 100,000 pregnancies)	References
Gynecologic Malignancies		
Breast	10–35	[1,5–9]
Cervix	10–12	[1,2]
Ovarian	0.6–5.2	[1,10,11]
Other Malignancies		
Hematologic (Lymphoma and Leukemia)	13–16	[1,12]
Thyroid	2–14	[1,13]
Melanoma	2.8–8.7	[1,14]
Colon	2.8–7.7	[1,15–17]

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