E15. Breast cancer during and after pregnancy

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Abstract

Pregnancy-associated breast cancer is a rare and distressing disease that should, as far as possible, be diagnosed and treated like breast cancer in non-pregnant women. Here, we discuss in short, diagnostic and therapeutic challenges and caveats.

Introduction

The current incidence of pregnancy-associated breast cancer is 1 in 3000 pregnancies.[1,2] This incidence is expected to increase, partly because of social economic features such as women having their first or subsequent baby later in life and partly because of the increased incidence of breast cancer in young women.

When corrected for stage, the pregnant woman has the same prognosis as her non-pregnant counterpart provided her treatment is not compromised.[1–3] However, a number of case report and case control studies have reported that women with pregnancy-associated breast cancer present with more advanced disease.[3] Thus both the diagnostic dilemmas and treatment strategies are challenging and demand a multidisciplinary approach.

Definition

The definition of pregnancy-associated breast cancer includes those women who develop breast cancer during their pregnancy or who develop breast cancer within 12 months of delivery.[1] The majority of these tumours are oestrogen receptor (ER) and progesterone receptor (PgR) negative (~75%).[4,5] Her2neu overexpression varies from 29 to 58%.[4,5] Most of the pregnancy-associated breast cancers are poorly differentiated.[4,5]

Diagnostics

Data suggest that patients who develop pregnancy-associated breast cancer may not be promptly diagnosed. Prioritisation of the pregnancy and other psychosocial issues may play a role in this. Furthermore, the normal varieties of breast density during pregnancy both mimic and mask the symptoms of breast cancer.

Diagnostic work-up of a breast mass in a pregnant or lactating woman has only a few caveats.[1] Physical examination should be followed by diagnostic imaging, including ultrasonography to distinguish a cyst from a solid mass, and mammography with abdominal shielding to assess the presence of microcalcifications and (additional) suspect masses. Because of the paucity of data on the use of magnetic resonance imaging (MRI) in pregnancy, and the concerns on safety of gadolinium, MRI is not recommended.[1] If staging is indicated, chest X-ray with abdominal shielding, liver ultrasound, and 'low-dose' bone scan can be safely performed.[6,7] A screening noncontrast MRI of thorax, spine and/or liver is an alternative.[1] Computer tomography (CT) scans are not recommended because of the amount of radiation exposure to the developing foetus.[1,6] Fine needle aspiration and core needle biopsy under local anaesthesia are both safe procedures. For accurate interpretation it is critical to inform the surgical pathologist about pregnancy or lactation.

Surgical aspects

After the diagnosis and staging has been performed, surgery can be performed safely from an anaesthetic point of view.[8] In the first trimester there is no other modality available, as discussed later, and, therefore, mastectomy plus axillary staging is the preferred treatment strategy.

Axillary staging by use of sentinel node procedure can be performed. The risk of foetal exposure to radiation during Technetium-99m localisation is estimated to be below 5cGy and therefore this can be used safely. Patent blue has not been FDA approved in pregnant women because of the risk of anaphylaxis. Although this risk is low, the use of patent blue is not recommended. In the second and third trimester, more treatment modalities are possible. Thus, in these trimesters, a multidisciplinary approach is needed to achieve the best individualised treatment. One can start with chemotherapy during pregnancy and perform surgery after delivery in which the type of surgery (ablative versus breast conserving) is decided based upon the regular guidelines.

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Radiation therapy

Radiotherapy during pregnancy might cause harm to the developing foetus. Therefore, pregnant women with cancer are generally advised to delay radiotherapy until after delivery.[1] The currently used standard radiation regime consists of 50 Gy on breast and chest wall. The expected foetal dose depends on the stage of pregnancy. The maximum dose the foetus will receive ranges from 0.03 Gy at 8 weeks to 0.20 Gy at 24 weeks, to 1.43 Gy at 36 weeks. With adequate shielding with 4 cm thick lead shields these estimated foetal doses can be reduced to, respectively, 0.16 Gy at 24 weeks and 0.20 Gy at 36 weeks. Since the threshold dose for deterministic effects is 0.1–0.2 Gy, pregnant women could in theory safely obtain curative radiation treatment for breast cancer when adequate shielding is applied, as shown in some sporadic reports.[9] However, little is known about the threshold dose for stochastic effects such as childhood malignancies. Therefore, clinicians always have to discuss alternative strategies enabling delay of radiation treatment.

Systemic therapy

Limited data on the use of chemotherapy during pregnancy suggest that anthracycline-based chemotherapy (5-fluorouracil, doxorubicine, cyclophosphamide (FAC) or AC) is relatively safe in the second and third trimesters.[1,10] It should be avoided during the first trimester as a 10–20% risk of congenital malformations has been reported.[1] Ondansetrone and dexamethasone can be used as antiemetics. Limited information is available on the safety of drugs such as taxanes, vinca alkaloids, trastuzumab and lapatinib, and therefore, these agents should generally be avoided.[10] Chemotherapy should be withheld after 35 weeks gestation in order to avoid maternal neutropenia during delivery, and accumulation of cytotoxic agents in the newborn due to insufficient hepatic and renal excretion and subsequent toxicity to the immature bone marrow.[11] Endocrine therapy causes birth defects, spontaneous abortion and foetal death and should be avoided during pregnancy.[1,11]

Breast feeding is contraindicated during chemotherapy and endocrine therapy.[11]

Conclusion

Pregnancy-associated breast cancer is a rare disease that should be diagnosed and treated like breast cancer in non-pregnant women. When corrected for stage, outcome is similar to breast cancer in non-pregnant, age-matched controls. CT scans should be avoided, and possibly also gadolinium as contrast-enhancing agent in MRI. Surgery can be applied in all trimesters, while (neo)adjuvant chemotherapy should be restricted to the second and third trimesters. Radiotherapy and endocrine therapy should preferably be delayed until after delivery. Whether treatment should start with surgery or chemotherapy depends on the duration of pregnancy and stage at presentation.

Conflict of interest statement

None declared.

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