Cancer in pregnancy

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Abstract

A diagnosis of cancer in pregnancy has an incidence of 0.1%. This is expected to rise with increasing number of women delaying childbearing into later life. Common malignancies are breast, cervix, leukaemia, lymphoma, melanoma, thyroid, ovary and colon. Diagnosis and treatment is a complex balance between maternal wellbeing and fetal wellbeing. An individualised treatment plan is crucial, with input from a multitude of professionals. The advantages and disadvantages of continuing with the pregnancy should be weighed against the physical and psychological wellbeing of both the parents and the child, along with the timing of maternal treatment and timing of delivery.

Keywords cancer; diagnosis; malignancy; pregnancy; treatment

Introduction

Cancer in pregnancy is a complex diagnosis that endangers two lives. The occurrence of cancer in pregnancy is rare, about 1:1000 pregnancies. However as women delay childbearing to their later reproductive years and the incidence of some malignancy rises with increasing age, this rare occurrence is likely to become more common. Diagnosis may often be delayed as physical signs may be masked or attributed to pregnancy-related symptoms. Diagnosis and treatment of cancer in pregnancy poses a complex challenge of balancing optimal maternal treatment and fetal well-being. There is considerable physiological and psychological impact to both women and their partners, so a multidisciplinary approach with a standardised management plan is crucial. It also poses a significant challenge to the physician due to an absence of large randomised trials, leading to lack of clinical guidance. Additionally personal concepts such as religious and emotional beliefs vary from one couple to another.

The most common malignancies in pregnancy are breast and cervical, followed by leukaemia, lymphoma, melanoma, colorectal and thyroid.

Cancers during pregnancy can be divided into those originating from the gestational tissue, or those from other tissue. Although some cancers may spread to the placenta, most cancers do not spread to the fetus itself. A pregnant woman with cancer is capable of giving birth to a healthy term baby. The main problems faced are the timing of investigations, treatment and the implications of these on the developing fetus.

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Investigations and imaging in pregnancy

As in non-pregnancy staging should be comprehensive. Ultrasound and magnetic resonance imaging are widely used and relatively safe. X-ray and CT expose the fetus to radiation. (Table 1) Fetal risks starts from 10 cGy. The risk for childhood cancer is highest after abdomino-pelvic imaging. In staging, fetal protection when ever possible with abdominal shielding is advised.

Management

The thought process for management is essentially the same as for the non-pregnant state. A holistic approach to treatment is vital, decided by a multidisciplinary team, including system specialists, oncologists, obstetricians, perinatalologists, paediatrician, psychologists, radiologists and specialist nurses (Figure 1).

Treatment

Surgery

Overall 0.75–2% of pregnant women will undergo surgery during pregnancy. Surgery and anaesthesia are considered safe during pregnancy. The patient should be positioned supine with a left lateral tilt. Adequate maternal monitoring is crucial in preventing hypoxia, hypotension and hypoglycaemia. Data suggests that surgery does not increase risk of miscarriage, only in cases of peritonitis was the rate of fetal loss increased. Open laparoscopic or left upper quadrant technique is preferred, as Verres entry puts the pregnant uterus at risk. The safest time to undertake laparoscopy is the second trimester.

Systemic treatment

During pregnancy multiple changes in physiology affect the pharmacokinetic processes of drugs. This may have toxic consequences to both the pregnant women and fetus. The potential risk of chemotherapy agents depends on the gestation at exposure.

At the fertilization and implantation stage (first 10 days) exposure will result in an all-or-nothing phenomenon. In the following 8 weeks organogenesis occurs putting the fetus at increased risks of congenital malformations. In the second and

Approximate fetal absorbed doses during imaging studies

Procedure	Fetal dose (cGY)
Chest X-ray	0.00006
Abdominal X-ray	0.15–0.26
Pelvic X-ray	0.2–0.35
Intravenous pyelography	0.4–09
Barium enema	0.3–4
Mammograph	0.01–0.04
CT thorax	0.01–1.3
CT abdomen	0.8–3
CT pelvis	2.5–8.9

Table 1

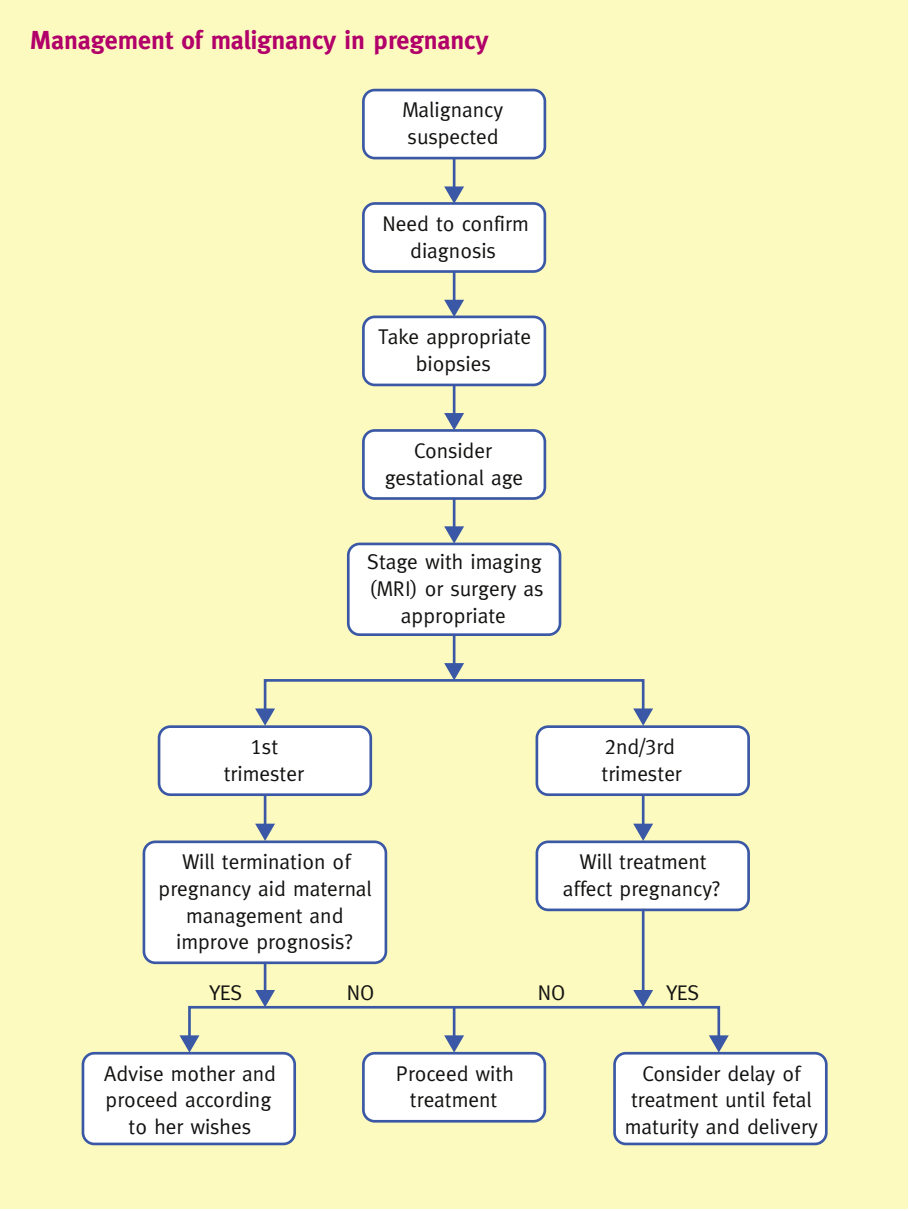

Figure 1

third trimester no major malformations are expected, however cases of growth restriction, prematurity, intrauterine death and haematopoietic suppression have been documented.

Common cytotoxic drugs used in gynaecological cancers include Platin, Paclitaxel, Bleomycin, Etoposide and Vinblastin. Specific cytotoxic drug effects are difficult to describe as combinations are frequently used.

The decision to administer chemotherapy should take into account gestational age, however the same guidelines as for non-pregnant patients should be followed during the management, for example, the timing of surgery, radiotherapy etc Chemotherapy is contraindicated until a gestation age of 10 weeks due to the increased risk of congenital malformation in the organogensis stage. Timing of delivery needs to factor in maturation of the fetus and oncology treatment schedule. Delivery should be planned at least 3 weeks after the last cycle of chemotherapy to allow bone marrow recovery to reduce the risk of haemorrhage and sepsis.

Supportive and symptom control therapy can be given according to general recommendations (Table 2). Corticoids, methylprednisolone and hydrocortisone are extensively metabolised in the placenta with minimal crossover into the fetus.

Therapeutic pelvic irradiation induces severe or lethal consequences to the pregnancy and should be avoided in ongoing pregnancies.

Thromboprophylaxis

The hypercoagulable state of pregnancy is associated with an increased risk of thromboembolic disease. This risk is even higher in pregnancy associated with cancer. Treatment and its duration would need to be decided on an individual basis with collaboration with the heamtologists.