When pregnancy and cancer intertwine, nurses play a big role in supporting the mother and baby during treatment. Maximize your care for pregnant women before, during, and after treatment by considering the diverse factors: the gestation of the fetus, drugs to use or avoid, the mother’s survival, and the impact on fertility. Through case presentations and audience discussion, you’ll also take in the social and religious standpoints on the protection of the baby and mother.

Content Area: Clinical Practice

Content Level: Intermediate

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Objectives:
At the end of this session, participants will be able to:
1. Identify three fertility issues facing the female patient with cancer.
2. Identify the most prevalent issues facing the pregnant patient with cancer.

Content Outline:
I. Review the fertility issues facing the patient with cancer.
II. Pregnancy prevention during cancer treatment
   A. Birth control
III. The pregnant patient diagnosed with cancer
   A. Cancer diagnosis
   B. Gestation of fetus
IV. Treatment issues
   A. Chemotherapy? What is safe?
   B. Psycho/social, religious issues
V. The cancer survivor and fertility preservation

Bibliography:
Barton, S.E., Missmer, S.A., Berry, K.F., & Ginsburg, E.S. (2012). Female cancer survivors are low responders and have reduced success compared with other patients undergoing assisted reproductive technologies. Fertility and Sterility, 97(2), 381-386. doi:10.1016/j.fertnstert.2011.11.02


Objectives

- Identify the most common malignancies diagnosed during pregnancy.
- Recognize the gestational weeks recommended for chemotherapy administration during pregnancy.
- Evaluate current literature supporting initiation of treatment during pregnancy. Drug treatment ??
- Identify most common complications when fetus exposed to chemotherapy.
- Discuss the legal implications for the oncology nurse.
- Identify pertinent patient education topics regarding pregnancy and cancer
- Discuss survivorship options in relationship to pregnancy during and after treatment for the cancer patient as well as fertility preservation.

Case study 1

- 39 year old female with Stage IIIA breast cancer.
- Post Mastectomy and 4 cycles of Adriamycin/Cytoxan
- Now on Tamoxifen
- 4 months post chemo patient complains of vague abdominal upset.
- Has Ultrasound to rule out gallbladder DX.

Case Study 1

- On Ultrasound patient discovered to have a 32 week gestation pregnancy
- On review of chart it was documented that patient stated she had been amenorrhea 2-3 months when she started chemo.
- Time line evaluation of chart revealed patient was most likely in her second trimester when Chemotherapy started.

PREGNANCY ISSUES

- PATIENTS DIAGNOSED WITH CANCER WHILE PREGNANT
- PREVENTING PREGNANCY WHILE ON TREATMENT FOR CANCER
- FERTILITY PRESERVATION FOR THE CANCER PATIENT

Incidence of Cancer Sites Among Pregnant Patients

- Breast and Cervical
- Hematological
- Other Cancer Sites including Derm, Thyroid and Colon

Case study 2

- 32 year old female 26 weeks pregnant
- On Antibiotics for respiratory infection with no relief
- Arrives in ER with acute respiratory distress
- Compromised airway
- Assessment reveals
  - 17cm mediastinum mass
  - Lymph node Bx =R/O lymphoma

- Incidence of Cancer Sites Among Pregnant Patients

Oncology Nursing Society 39th Annual Congress
May 1–4, 2014
PREGNANCY ISSUES

- PATIENTS DIAGNOSED WITH CANCER WHILE PREGNANT
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- FERTILITY PRESERVATION FOR THE CANCER PATIENT

Issues with chemotherapy

- Multidisciplinary approach
- Gestational age of fetus at diagnosis
- Fetal status at diagnosis
- Desires of mother
- Type/stage of disease
- Usually contraindicated in first trimester and chemotherapy is delayed

Diagnostic Tests

Safe to do
- Radiation less than 5 cGy
- Abdomen shielding
- MRI without contrast
- FNA or Core Biopsy
- Bone Marrow Biopsy
- Mammography

Not recommended
- MRI + contrast – gallium
- Minimal use of CT and bone scans due to the radiation exposure

Timing is the key

- First Trimester=Weeks 1-13
  - No chemo during this period
- Second Trimester=Weeks 14-17
  - Start Chemotherapy
- Third Trimester=Weeks 27-40
  - Stop Chemotherapy

Early first trimester

- Fetal malformations up to 25% occurrence with multiagent chemotherapy
- Normal pregnancy = 1 to 6% risk for malformations
- Weeks 8 to 15 CNS development normally

Second and third trimester

- Differentiation and synaptogenesis occur weeks 16 to 25.
- Intrauterine growth restriction (IUGR) after 25 weeks
Chemotherapy
Always ultrasound before next cycle

First Trimester
• Not recommended due to risk of fetal malformations, spontaneous abortion, teratogenesis due to placental transfer of drug
• 83 to 93% malformations were exposed to chemo

Second and third trimester
• Look for changes in amniotic fluid level, fetal growth and function of placenta
• Low birth weight with increased risk of mortality

Specific drugs
• Antracyclines – weekly
  – Dose, regimen, type
• Metotrexate – not in first trimester
• Cyclophosphamide – reports of CI childhood cancer
• 5-FU
• Taxanes – may not be effective during pregnancy

Transmodality Team
• RN might be primary contact or coordinator
• Importance of the team communicating with the patient
• Scheduling of appropriate appointments and tests prior to treatment

Nursing considerations
• Complete education for women with child bearing potential
• Coordinate and communicate
• Weekly calls
• Monitor changes due to pregnancy and changes due to malignancy

Delivery
• Less than 37 weeks with NICU management
  – Pre-term births 70% of neonatal death
  – Neurodevelopmental delays
  – Temperature instability, respiratory distress
  – Risk of death decreases with each week in utero
• Often by C-section
• 3 to 4 weeks after chemotherapy treatment

Follow up
• Chemo and or radiation for mom
• Caring for infant with complications
• Pregnancy during treatment does not correlate with recurrence depending on the stage of diagnosis and treatment
Case Study 3

- 29 yr old female. Recently married
- Admitted for neoadjuvant chemotherapy for a 5cm sarcoma in left femur.
- Plane to do Chemotherapy pre and post surgery with goal for curative therapy
- Plan for fertility preservation???

Risks to Fertility

- **Chemotherapy**
  - Highest Risk: Cyclophosphamide, melphalan, busulfan, chlorambucil, procarbazine, nitrogen mustard
  - Moderate Risk: Cisplatin, doxorubicin, paclitaxel
  - Low Risk: Methotrexate, 5-flourouracil, bleomycin, actinomycin D, vinca alkaloids
- **Radiation**
- **Surgery**
- **Age**

Fertility Preservation Methods

- ovarian transposition
- embryo cryo- preservation
- immature or mature oocyte cryopreservation
- ovarian tissue cryopreservation

Fertility Options

<table>
<thead>
<tr>
<th>Standard Treatment</th>
<th>Experimental</th>
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</thead>
<tbody>
<tr>
<td>Embryo Freezing</td>
<td>Egg Freezing</td>
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<tr>
<td>Radiation Shielding of Gonads F/M</td>
<td>Ovarian/Testicular Tissue Freezing</td>
</tr>
<tr>
<td>Ovarian Transposition</td>
<td>Ovarian Suppression</td>
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<tr>
<td>Radical Trachelectomy</td>
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<td>Donor Embryos</td>
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<tr>
<td>Donor Eggs/Sperm</td>
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<tr>
<td>Gestational Surrogacy</td>
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<td>Adoption</td>
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<td>Sperm Banking</td>
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<tr>
<td>After puberty</td>
<td>Testicular Sperm Extraction</td>
</tr>
</tbody>
</table>

Pregnant with Cancer Patient Resources

- **Breast Cancer Facts and Figures**
- **Breast Cancer Treatment and Pregnancy**
  www.cancer.gov/cancertopics/pdq/treatment/breast-cancer-and-pregnancy/Patient
- **Pregnancy Exposure**
  Registrieswww.fda.gov/ScienceResearch/SpecialTopics/WomensHealthResearch/ucm134844.htm
- **Pregnant With Cancer Network**
  www.pregnantwithcancer.org
- **U.S. Food and Drug Administration Resources for Women**
  www.fda.gov/womens/registries/default.htm#what

(Brown et. al., 2009)

TRACHECTOMY

- Surgical removal of the uterine cervix.
- The uterine body is preserved.
- Surgical alternative to radical hysterectomy
- Radical and Simple procedures
Survival of the Fetus

- Patients preference
- Timing of the treatment
- What agents were given
- What are the odds of the fetus surviving

Pregnancy After Cancer

- Is it safe?
  - Currently premenopausal women with a diagnosis of breast cancer are advised to wait two years before attempting to conceive.
  - Are there other health issues?
    - Heart
    - Lung
- Evaluating the impact of treatment on fertility
  - Resuming menstruation
  - Menopausal symptoms
  - Evaluation by a Reproductive Endocrinologist

Role of Oncologist/Health care provider

- Examine patients risk for pregnancy and encourage pregnancy prevention during chemotherapy
- Involve a multidisciplinary team to Discuss best course of management of a pregnancy when cancer is diagnosed and chemotherapy is course of treatment
- Management of Maternal and fetal risk/wellbeing should be discussed and decided upon with Patient as a major decision maker.

Case study 4

- 29 year old with a 17 cm adeno cervical mass
- Going to receive concurrent chemotherapy and radiation.
- Patient has RT in AM to cervical tumor site. Goes to infusion clinic to begin chemotherapy.
- Pregnancy test done before chemotherapy started. (Per Hospital Policy) Positive result!!!
- Cervix just radiated. Fetus did not survive!!!
- Legal implications!!!

Case presentation 1

- Patient post 4 cycles of AC. On Tamoxifen
- Delivered normal baby at 37 weeks
- Patient and baby lost to follow up after DC

Case Presentation 2

- Patient, 26 weeks gestation
- Presents to ER with mediastional mass
- RCHOP times 5 cycles then Baby delivered
- RCHOP 2 more cycles post delivery
- Baby and mother doing well!!!