Pregnancy and Cancer

EFFECTS OF CANCERS ON PREGNANT WOMEN

- A study that included 1,047 women diagnosed with cancer either during pregnancy or immediately thereafter revealed that there were **differences in outcomes depending on the type of cancer** with which the woman was diagnosed and whether the diagnosis occurred during pregnancy or after birth.
- **Hormonal and blood volume changes** that occur during pregnancy **can affect how a drug is metabolized** by the mother and may lead to under- or overdosing.

EFFECTS OF CANCER THERAPIES ON PREGNANT WOMEN

Studies have reported that:

Cancer treatments including **chemotherapy, radiation therapy, and surgery led to a 54 percent increase in preterm births**, of which 51.2 percent required admission of the baby to an intensive care unit.

- Preterm babies born to mothers who received cancer therapy when pregnant showed **worse cognitive outcomes** compared to babies born at term to mothers who had not received chemotherapy.

EFFECTS OF CHEMOTHERAPIES ON PREGNANT WOMEN

Chemotherapies that have been studied in pregnant women include antimetabolites (aminopterin, methotrexate, and cytosine arabinoside) and alkylating agents (chlorambucil, mechlorethamine, and cyclophosphamide) among others.

- **During the first three months of pregnancy**, the **risk of birth defects or miscarriage** from exposure to chemotherapies is high.
- The administration of chemotherapy **during the first trimester** led to **increase in malformations in the fetus** (seven to 17 percent increase with a single agent, and a 25 percent increase with chemotherapy combinations).
- Chemotherapy **during the later stages of pregnancy** can lead to low blood count, which may **increase the risk of infection for the mother**, placing the health of both mother and child at risk.
- **During the second and third trimesters**, the **placenta can act as a barrier to protect the developing fetus** from some drugs. Current evidence is highly variable regarding the risk of malformations, side effects, and spontaneous abortion, and indicates that the **outcome depends on type of treatment, cancer type, and when treatment started or ended**, underscoring the need for additional studies with a larger patient population.

EFFECT OF OTHER TYPES OF CANCER TREATMENTS ON PREGNANT WOMEN

Surgery

Generally safe for pregnant women. However, some surgeries, such as hysterectomy for cervical cancers, will lead to the termination of pregnancy. Similarly, when anesthesia is required for surgery, it carries the risk of several complications, including an increased risk of miscarriage during the first trimester.

Radiation therapy

At low doses is considered safe and is not associated with an increase in birth defects as long as precautions are taken to protect the fetus against radiation. Higher doses are not recommended.

Immunotherapies and molecularly targeted therapies

Have become a part of routine cancer care only in the past decade, and there are very few preclinical or clinical data on how these treatments alone or in combination may affect pregnancy, the fetus, or fertility:

- There have been just seven reported clinical cases of negative effects as a result of the use of immune checkpoint inhibitors in pregnant women, however, these effects resolved resolve within six months.
- Molecularly targeted therapies including trastuzumab, imatinib, ATRA, dasatinib, and nilotinib have been shown to lead to major malformations or spontaneous abortion when administered in the first trimester.