

TRANSMISSION OF CANCER - **FACT** or fiction?

“Mothers can pass on cancer in womb” screamed a headline; with the statement: “Scientists have proved that it is possible for a mother’s cancer cells to be passed to her unborn child.” To mothers and prospective parents, this has the potential to create unnecessary anxiety. Life is already full of everyday surprises and stressors, do parents still need another thing to worry about? No, that is why we asked Dr Sumayya Ebrahim to give a balanced view on this subject, showing just how rare it is.

The story started with a study published in *Proceedings of the National Academy of Sciences*. The case involved a Japanese mother who was diagnosed with leukaemia a few weeks after giving birth. Her daughter, when aged 11 months, was subsequently also found to have the same cancer growing in her lung and cheek.

HOW DID THEY KNOW IT WAS THE SAME CANCER?

When the cancer cells were analysed, genetic studies pointed to the origin from the mother only. There was no genetic material from the father. Further studies also suggested that these cancer cells were not created within the child’s own system. The conclusion then, was that the cancerous cells had to be transferred from mother to child during the foetal period in the mother’s womb. So, in summary, the cancerous cells crossed over to the baby via the placenta, entered the baby’s circulation, migrated to the cheek and lung, and grew there.

For this to happen, the cancerous cells would have to evade destruction by the baby’s immune system.

Now, what usually happens, is that cells can pass between mother and developing baby all the time. This

process of cellular traffic is called microchimerism. When the cell going from mom to baby is a cancerous cell, the baby’s immune system should identify it as a foreign threat and destroy it. But if the cancerous cell has undergone certain genetic changes or mutations, this can make it invisible to the baby’s immune system. This is when it can then grow undisturbed and be detected as cancer, later on in a child.

This is what happened in the Japanese mother. In this instance, the mutation was a missing piece of genetic material on chromosome 6 (called a deletion). Because of this deletion, the cancerous cells lost surface markers that would identify them to the child’s immune system, as a threat, to be destroyed. This meant that they grew unchecked and showed up later when the child was 11 months old.

WHAT IS THE REAL RISK OF THIS HAPPENING?

Transmission of cancer from a mom to her unborn baby is extremely rare. The spread seems to happen via the blood circulation across the placenta. From 1866 to date, reported cases have been under 80 in number. The most common tumour to cross over is malignant melanoma (skin cancer).

The second most common is leukaemia (blood cancer) and the third is lymphoma (lymph node cancer).

One study published in the *Journal of Clinical Oncology* found that if a mother has been diagnosed with melanoma in pregnancy, the placenta should be carefully examined at birth. If it has evidence of the cancer, then there is a 22% chance that the baby will develop the cancer in the future. This baby is then considered high-risk and should be carefully monitored.

We must remember, however, that the overall incidence of melanoma is low-quoted as between 0,14 - 2,8 cases per 1000 births. It accounts for 8% of all cancers in pregnancy.

TAKE HOME MESSAGE

While it is possible for certain types of cancer to be transmitted from mother to baby, the cancer danger is minimal because the situation is so rare.

Knowing how this works and doing more research into these unusual situations can have helpful implications: scientists can learn what makes cancers escape detection by our immune systems. They can then manipulate this information to design effective preventatives as well as successful treatment strategies.

References available on request.

MEET OUR EXPERT

Dr Sumayya Ebrahim is a gynaecologist in private practice in Johannesburg. She is also a blogger. Check out her blog *Vaginations by Dr E* on www.vaginations.co.za

