

Study: Cancer may pass from mother to unborn child

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(PhysOrg.com) -- A new study has provided genetic evidence for the first time that it is possible for a mother to transmit cancer to her unborn child via the placenta.

Cases have been reported on rare occasions where a mother and newborn [child](#) develop the same [cancer](#), but there has never been proof until now that the mother passed the cancer to the child. In theory it should not be possible, since the infant's [immune system](#) should destroy the cancer cells.

The team of British and Japanese researchers studied a case in Japan in which the 28-year-old mother developed leukemia shortly after giving birth to a daughter. Eleven months later the baby developed a cancer with the same genetic markers as her mother's cancer cells.

Using advanced genetic fingerprinting techniques, the scientists were able to prove the leukemia cells in the baby were present at her birth, and that they could only have come from the mother, since the cancer cells had an identical mutation in the cancer gene BCR-ABL1.

They also looked at how the cancer cells from the mother could have avoided being destroyed by the infant's immune system, and discovered that the baby's cancer cells lacked part of the DNA that would have indicated to the immune system the cells were foreign. The leader of the team, Professor Mel Greaves of the Institute of Cancer Research in Sutton, UK, said the [cancer cells](#) were in effect invisible to the immune system and therefore were able to implant without being attacked.

The transfer of cancer from mother to unborn child is rare, with only around 30 cases known, and the mother usually has a [melanoma](#) or [leukemia](#). Professor Greaves stressed that even if the mother has cancer it is still extremely unlikely she would pass it on to the child, but if pregnant women with cancer are concerned, they should seek the advice of their specialists.

Chief Clinician at Cancer Research UK, Professor Peter Johnson, said the research was important because it shows that for cancers to grow they need to elude the immune system. This means we might be able to develop new treatments that help alert the patient's immune system to the presence of cancer.

The research findings are published in the *Proceedings of the National Academy of Sciences*.

More information: Immunologically silent cancer clone transmission from mother to offspring, *PNAS*, [doi:10.1073/pnas.0904658106](https://doi.org/10.1073/pnas.0904658106)

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