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CHILD Study researchers uncover immune status "shift" during healthy pregnancy

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A recent CHILD Study publication sheds new light on an old question: What changes occur in a woman's immune system during a healthy pregnancy?

Much work has been done on problems of pregnancy, but surprisingly little is known of the immune system during healthy pregnancies that lead to successful deliveries. Research to date, usually in small pilot studies, has produced contradictory findings. Some data suggest that the immune system skews towards an inflammatory response, presumably to better protect against infection. In contrast, other studies indicate that the maternal immune system is suppressed to prevent rejection of the baby.

The CHILD Study findings reveal that the maternal immune system shifts towards an actively anti-inflammatory status and that this change becomes increasingly pronounced during the last two trimesters of pregnancy. The study is the largest performed to date on the immune system of women during healthy pregnancies.

Using data from more than 250 women participating in the CHILD Study, the researchers found that most pro-inflammatory proteins were reduced during pregnancy compared to levels seen one or three years after giving birth. Conversely, anti-inflammatory proteins were found to be temporarily elevated during pregnancy, then reduced in number post-partum.

"The immunological changes that take place during a normal pregnancy are poorly understood," says Dr. Kent HayGlass, the CHILD Study investigator who led the research. "Our work shows that there are increasingly pronounced changes in immune balance as a healthy pregnancy progresses. For us to better understand and help women who experience difficult pregnancies, we need to first properly understand what a normal healthy pregnancy should look like."

Dr. HayGlass is a professor in the Departments of Immunology, Medical Microbiology, Pediatrics and Child Health at the University of Manitoba and a Canada Research Chair in Immune Regulation.

"Using a matched study design such as this, which follows the same individuals during and after pregnancy, and involving such a large number of women, is logistically challenging but highly important," adds Dr. HayGlass. "The contribution made by these CHILD Study participants has provided us with a much clearer picture of how the immune system changes during a healthy pregnancy. This will ultimately help us and others to better investigate and understand the mechanisms that underlie difficult or unsuccessful pregnancies."

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