

Bacteria possible cause of preterm births

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The type of bacteria that colonize the placenta during pregnancy could be associated with preterm birth and other developmental problems in newborns according to research published in the current issue of the online journal *mBio*.

"The fetal inflammatory response appears to contribute to the onset of preterm labor, fetal injury and complications, underlying lifetime health challenges facing these children," say the researchers from Harvard Medical School, Brigham and Women's Hospital and Children's Hospital of Boston. "Our data suggest that placental colonization by specific groups of organisms can increase or decrease the risk of a systemic inflammatory condition."

Preterm birth occurs in nearly a half million pregnancies in the United States alone. Despite improved care, preterm and especially extremely low-gestational-age newborns continue to be at a considerably higher risk of morbidity, mortality and developmental problems. Much of this risk is attributable to imbalanced inflammatory responses of the fetus and newborn.

The systemic fetal inflammatory response to intrauterine exposures, especially intrauterine infections, is regarded as an important contributor to the onset and often lifelong consequences of preterm labor, fetal injury and early organ damage. Approximately half of all placentas delivered before the second trimester and 41% of those delivered by Caesarean section harbor microorganisms detectable by culture techniques.

In order to better understand what role, these microorganisms could play in the extremely preterm inflammatory response the researchers analyzed [protein biomarkers](#) in dry blood spots obtained from 527 newborns delivered by [Caesarean section](#) and cultured and identified the [bacteria](#) from their respective placentas.

Placentas colonized primarily by microorganisms commonly associated with the condition know as bacterial vaginosis (BV) were found to be associated with elevated levels of proinflammatory protein in newborns. In contrast, colonization by *Lactobacillus* species of bacteria (often found in decreased concentrations during BV) were associated with lower levels of proinflammatory proteins.

"Our study supports the concept that the placental colonization with vaginal microorganisms can induce a systemic [inflammatory response](#) in the fetus and newborn and that the dominating molecular feature of this response can be dependent on the type of bacteria," says Andrew Onderdonk of Harvard Medical School and Brigham and Women's Hospital, one of the authors of the study. "Our data suggest that the targeting of placental colonization by specific drugs or probiotics during early pregnancy may hold promise for preventing not only preterm birth but also the devastating and far-reaching inflammatory consequences in premature newborns."

More information: The journal article can be found online at mbio.asm.org/content/2/1/e00280-10

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