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Differences in cytokine concentrations in maternal serum and umbilical cord blood may be related to placental exchange control mechanisms

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Introduction: The placenta is a complex organ that mediates maternal-fetal exchange. Placental perfusion models have shown that there is minimal transfer of certain inflammatory cytokines to the fetal circulation, but bidirectional transfer of cytokines also exists.

Objective: This study evaluated if cytokine concentrations in normal and overweight mothers may be similar to the ones of their newborn babies.

Methods: Thirty-four pregnant women were included in this study after being admitted to the labor and delivery unit of the National Institute of Perinatology. All participants had single non-complicated pregnancies and did not receive any medication at least three weeks prior to pregnancy termination. Immediately after delivery, maternal blood was obtained by venipuncture and fetal blood was obtained from the umbilical artery. Clinical and demographic data was obtained from clinical records. Cytokine concentrations were measured in maternal and umbilical blood serum using a 27 plex-panel cytokine assay from Bio-Plex (BioRad).

Results: Related t-test of all the participants' samples revealed significant differences between mother and baby's concentrations of IL1-RA, IL-4, IL-6, IL-7, IL-12, IL-13, IL-17, Eotaxin, G-CSF, GM-CSF, IP-10, MCP, MIP-1 β , RANTES and VEGF. MANOVA results showed higher but non-significant concentrations of IL-10 in normal weight women and their babies, compared to those in overweight women. No significant differences were found for any cytokine among weight groups.

Conclusion: The placenta is an important mediator of maternal-fetal cytokine exchange because it exerts control over the cytokines that are transferred to the fetal circulation. Cytokine transfer appears to be similar in normal and overweight women. However, the effect of co-variables was not evaluated.

Biography

Estibalitz Laresgoiti-Servitje is a Researcher at the Tecnológico de Monterrey. She received her Medical Doctorate in 1996. Her Post-graduate studies include a Master's in Immunology, a Master's in Neurosciences and a PhD in Health Psychology. Her research interests include the neuroendocrine regulation of the immune system and the modulation of the immune system during normal pregnancy and preeclampsia.

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