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The vaginal microbiome of gravidae in health and disease

Background: There is limited knowledge of the community structure of the vaginal microbiome of pregnant women. This work aimed to provide a more complete description to the vaginal microbiome of pregnant women in late pregnancy and to investigate differences between the microbiota of healthy gravidae women and those who experienced complications during pregnancy, in particular women giving birth at term or preterm.

Methods: Upper vagina swabs were obtained from 225 women of Caucasian, Asian, Indian, Middle East and Pacific Island racial backgrounds during the third trimester of pregnancy. Participating women were administered a questionnaire including demographic data and summarizing the history of the pregnancy; 132 women of five ethnic backgrounds had no complications during the pregnancy. The identity of the taxa present was determined by ultrafast sequencing of the V1V3 regions of the 16S rDNA gene of DNA extracted from the swabs. The sequence data were analyzed with mothur and statistical analyses were performed employing various bioinformatics tools.

Results & Discussion: The relative abundance of some phyla was different in pregnant and non-pregnant (from other studies) women. Multi dimensional scaling analyses showed the bacterial populations of women without complications to cluster in four vaginotypes driven by four Lactobacillus species. This organization was partially dependent on the racial background of the woman and was altered by complications during pregnancy. A cluster analysis showed a fine structure in these vaginotypes created by taxa belonging to the genera Escherichia, Atopobium and Prevotella. The participants were stratified into two groups with or without complications during pregnancy. Using univariate analysis, 9 genera were found significantly correlated with genital infections. PERMANOVA analyses yielded significant differences between the microbiomes of both groups.

Biography

George L Mendz has completed his MSc from the University of Barcelona, Spain and PhD from the University of NSW. He has been Lecturer at the College of Natural Sciences, the University of Puerto Rico (San Juan); Research Associate at the School of Chemistry and the Department of Biochemistry, the University of Sydney; ARC Senior Research Fellow and Associate Professor at the School of Biochemistry and Molecular Genetics, the University of NSW; Associate Professor at the Department of Bacteriology, the University of Bordeaux II; and Associate Professor at the School of Medical Sciences, the University of NSW..

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