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Poster presentations

Immunity in Nigerian women and the effects of pregnancy and infectious disease exposure on fetal immunity

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The control of maternal immunity during pregnancy and the impact of maternal infections on the fetal immune system are not well characterized. We initiated studies on pregnant women in Nigeria and their offspring, with a goal of characterizing maternal immunity and how it affects the developing fetus. We concentrated on – T cells, in particular on the Vg2-Jg1.2+ subset, a lymphocyte population responsible for rapid and robust Th1 responses to multiple pathogens and tumors. Otherwise healthy pregnant women in Nigeria (n = 22) had average Vg2-Jg1.2 frequencies significantly lower than a cohort of healthy control subjects gathered in North America and 6 of 22 (27%) women had severely depressed values. Among HIV-infected pregnant women in Nigeria the Vg2-Jg1.2+ subset was also low, but was similar to HIV+ adults from Baltimore. We also asked examined the – T cell receptor repertoire in cord blood mononuclear cells from deliveries to both HIV+ and HIV-neg Nigerian women. Most cord blood populations were naïve and had very low representation of the Vg2-Jg1.2+ subset. However, 3 of 13 specimens (23%) were unusual in having a – T cell receptor repertoire that was more similar to adult values and unlike the highly naïve cord blood cells seen in specimens from North American or European deliveries. These data reinforced our previous observations from cord blood specimens in the Ivory Coast, where we first noted the appearance of unusually mature cord blood cell populations with high functional responses to – T cell antigens. Knowing that – T cells are impacted not only by HIV, but also by malaria and tuberculosis, we are initiating a study to uncover possible environmental exposures during pregnancy and how these experiences imprint on the fetal immune system. At present, our focus is on malaria due to the high risk for infection in Nigeria, the known devastating consequences for babies born to infected mothers, and the interaction of HIV and malaria resulting in accelerated disease.