#340 Sarah Shidid Advisor(s): Dr. Tamar Smith-Norowitz Ph.D.

Chlamydia pneumoniae-Induced IFN-Gamma Responses in Peripheral Blood Mononuclear Cells Increase Numbers of CD4+ but Not CD8+ T Effector Memory Cells

Background: Chlamydia pneumoniae causes respiratory infection in adults and children. Previous studies in our laboratory identified significantly higher in vitro T lymphocyte responses to C. pneumoniae in children with asthma compared to healthy controls which may indicate the presence of T effector memory (TEM) lymphocytes.
Aim: In the present study, healthy subjects were screened for the presence of TEM cells and their cytokines. CCR7 negative effector TEMs may indicate persistent infection with C. pneumoniae.
Methods: Peripheral blood mononuclear cells (PBMC) (1× 106/mL) from adult non-asthmatic subjects were infected for 1h ± C. pneumoniae TW-183 at a multiplicity of infection (MOI) = 0.1 and cultured (48 hrs). Distributions of lymphocytes (CD4+, CD8+) and TEM cells (CD4+CCR7+CD45RA+CD154+, CD8+CCR7+CD45RA+CD154+) were determined. Levels of intracellular interleukin (IL)-2, IL-4, and interferon (IFN)-gamma were measured (flow microfluorimetry); IFN-gamma was measured in supernatants (ELISA).
Results: C. pneumoniae infection led to a decrease in numbers of CD8+ TEM and CD8+CD154+ cells; CD4+TEM and CD4+CD154+ cells did not change. Numbers of TEM cells (CD4+IL-2+, CD8+ IL-2+) also decreased. However, number of TEM cells (CD4+IL4-+, CD8+ IL-4+) and (CD4+ IFN-gamma+, CD8+IFN-gamma+) did not change. When stratified according to IFN-gamma+ status, numbers of CD4+ IL-2+ and CD4+IL-4+ TEMs increased; CD8+IL-2+ and CD8+ IL-4+ TEMs decreased.
Conclusion: C. pneumoniae-induced PBMC IFN-gamma+ responses increased numbers of CD4+ IL-2+ and CD4+IL-4+ TEM cells, while CD8+IL-2+ and CD8+IL-4+ TEMs decreased. Production of IFN-gamma by C. pneumoniae infected PBMC should be further studied as a biomarker of persistent infection in humans.