

P9 Oral Immunization with *Plasmodium chabaudi chabaudi*-Parasitized RBC Induces Expansion of B-1 Cells

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We are assessing the ability of mucosal immunization to modulate systemic responses to malaria antigens. Semi-resistant BALB/c mice and susceptible BALB/cBYJ mice were given parasitized RBC (pRBC) orally and various lymphocyte subsets were analyzed by flow cytometric analysis to look for differences in peritoneal and splenic lymphocyte responses. Mice were given three oral intubations with pRBC before infection with *P. chabaudi* strain 1309. Non-infected or infected, PBS-fed BALB/c mice were used as controls. One subset we examined were nonconventional B cells residing in the peritoneal cavity. B-1 cells are self-renewing and tend to secrete low-affinity antibodies with broad specificity against epitopes recognized by autoantibodies. These epitopes include erythrocytes, ssDNA, lipids, proteins, and bacterial components. Infection of mice with *P. c. chabaudi* induces an increase in B-1 cells in BALB/c but not in BALB/cBYJ mice. Semi-resistant BALB/c mice fed with pRBC have significantly increased peritoneal B-1 cells compared to the PBS-fed group. Peritoneal B-1 cell numbers remain the same in pRBC-fed and PBS-fed groups in susceptible BALB/cBYJ mice fed with pRBC. To test for non-specific B-1 cell activation in BALB/c and BALB/cBYJ mice, each animal was given either an i.p. or oral dose of the mitogen, LPS. B-1 cells were decreased by i.p. injection of LPS but were increased by LPS feeding in both mice strains. Splenic B-1 cells in BALB/c and BALB/cBYJ mice expand 2- to 10-fold in response to both oral or i.p. LPS stimulation. Thus, oral or i.p. LPS treatment reveals no differences in B-1 cell expansion in response to mitogenic stimulation. However, our preliminary data indicate that oral feeding with malaria parasite antigens differentially affect peritoneal and splenic B-1 cell populations in these two mouse strains. These studies will elucidate the role of B-1 cells in regulating immune responses to malaria antigens.

P10 Mechanisms of Antibody Production by Gut-Associated Lymphoid Tissues After I.M. Immunization with Rotavirus

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Intramuscular (i.m.) immunization of mice with rotavirus (RV) induces mucosal humoral immune responses and protection from challenge. Adoptive transfer studies were performed to identify the cell type(s) responsible for the generation of antibody-secreting lymphocytes in gut-associated lymphoid tissue (GALT) after i.m. immunization. Three days after i.m. immunization of BALB/c mice with murine rotavirus strain EDIM draining inguinal lymph nodes (ILN) were harvested. 2×10^7 ILN cells were transferred intravenously or intraperitoneally into naive BALB/c recipient mice. Antibody production by GALT tissues was assessed 2 weeks after transfer. Transfer of unfractionated cells resulted in detectable RV antibody-secreting lymphocytes in GALT of recipient mice. Likewise, transfer of either 1) irradiated unfractionated cells, or 2) non-irradiated cells depleted of B cells also resulted in production of RV Abs by GALT of recipient mice. Migration of antigen-presenting cells from draining peripheral lymph nodes may be responsible for inducing antibody-secreting cells in GALT after i.m. immunization.

P11 Response to Influenza Vaccine in HIV-Infected Individuals

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Objective: A study of the serological response of influenza vaccine in HIV-infected patients and the effects on CD4 counts and viral loads.

Methods: Eighty-one HIV-infected patients were vaccinated with Fluvirin®. CD4 count, viral load, and influenza titers were measured at baseline and again three weeks post vaccination. All patients were on stable anti-retroviral therapy. Serological response was defined as a two-fold increase in influenza titer. Viral load changes of $>0.5 \log_{10}$ was considered significant.

Results: Only three of 81 patients had a serological response to vaccination. They had baseline CD4 counts >500 /ml and viral loads <5000 /ml. Seven patients had a significant increase in viral load while three had a significant decrease. There was no significant change in CD4 count.

Conclusion: Our study shows a poor response to influenza vaccine in HIV-infected patients with a possible deleterious effect on viral load. More studies should be done before routinely recommending influenza vaccine in this population.

P12 Immunogenicity of FDA Versus WHO DTP

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Objective: To study the immunogenicity of 3 doses of DTP when given either as WHO or FDA formula.

Methods: In a clinical trial, children at the age of 6 weeks were randomized to receive either FDA DTP or WHO DTP, with other routine vaccines at 6 weeks, 3 months and 5 months. Antibodies against tetanus, diphtheria and pertussis were measured one month after the third dose.

Results: Anti-tetanus and anti-diphtheria were significantly higher in the group vaccinated with the FDA DTP. GMT for anti-tetanus was 9.9 in FDA group compared to 6.3 in WHO group, $p=0.016$, and GMT for anti-diphtheria was 1.3 in FDA group compared to 0.84 in WHO group, $p=0.043$.

Conclusion: Although diphtheria and tetanus antigens in the FDA formula are half the concentration in the WHO formula, they are more antigenic. Methods of potency assay should be re-evaluated.