640. Prospective Association of Serum Vitamin D Level with Sepsis-Mortality in Postmenopausal Women: Results From the Women's Health Initiative

Paulette Pinargini, MD1; Reema Qureshi, MD2; Wilmer Salazar, MD3; Mary Roberts, MS4; Charles Eaton, MD, MS5; Linda Sneteslar, PhD, RDN, LD6; Meryl LeBoff, MD1; Ann Manson, MD, MPH7; Isaku Kato, PhD8 and Erin S LeBlanc, MD, MPH8

Backgrounds. Vitamin D deficiency has been studied in the critically ill, and has been associated with worse morbidity and mortality rates, especially in those admitted with sepsis. Sepsis is a major cause of ICU admissions and accounts for 250,000 deaths per year. Dihydroxyvitamin D can inhibit the production of interleukins, tumor necrosis factor and can also increase the expression of endogenous antiproteolytic enzymes.

Methods. This was a prospective study composed of participants from the Women’s Health Initiative (WHI) in the Vitamin D/Calcium trial who have been followed for an average of 15 years. The analysis sample consists of participants who had 25(OH)D measured at baseline. Patients with kidney disease and self-reported cancer at enrollment were excluded. Vitamin D deficiency was defined as levels <20 ng/mL and mild deficiency [25(OH)D 20-29 ng/mL]. Cox proportional hazard model was used to study the association between vitamin D status and 30-day mortality.

Results. In total, 8,014 patients were included in the study (mean age = 64.4 years). At baseline, 49.26% (n = 5,328) of the sample had vitamin D deficiency and of those who died from sepsis, 57.7% (n = 41) where found to be vitamin D deficient. We found statistically significant increased hazard ratios (HR) for sepsis mortality in mild deficiency (HR = 1.19; 95% CI 1.00-1.41) and severe vitamin D deficiency (HR = 1.82; 95% CI 1.50-2.12) in age adjusted and fully adjusted models (Table 1).

Conclusion. Vitamin D deficiency is associated with increased risk of sepsis mortality in postmenopausal women, which was seen in all ages. A clinical trial evaluating adequate supplementation in patients with sepsis is recommended to assess clinical significance.

Table 1. Odds of death for women with Vitamin D status at enrollment

| Model | Severe Deficiency | Mild Deficiency | No deficiency |
|-------|-----------------|----------------|-------------|
| Model 1: Crude | 2.12 (1.17, 3.87) | 2.11 (1.76, 2.52) | 1.27 (1.08, 1.49) |
| Model 2: Age-adjusted | 2.14 (1.15, 3.94) | 2.08 (1.73, 2.49) | 1.20 (1.02, 1.41) |
| Model 3: Age + Sex** | 1.59 (1.10, 2.28) | 1.41 (1.44, 2.13) | 1.17 (1.09, 1.38) |
| Model 4: Age + Behavioral variables*** | 1.01 (0.71, 0.63) | 0.67 (0.48, 0.95) | 0.95 (0.77, 1.18) |

**Vitamin D levels ≤ 20 ng/mL
***Behavioral variables: smoking, daily exercise, alcohol intakes, BMI, diet.

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641. Development of Structural Epitope Targeting During B-cell Ontogeny from Febrile Patients with and Without Kawasaki Disease

Donato De Santiago de Guayaquil, Guayaquil, Ecuador, 1Brown University, Providence, Rhode Island, 2University of Iowa, Iowa city, 3Bingham and Women's Hospital, Providence, Rhode Island, 4Harvard Medical School, Boston, Massachusetts, 5Wayne State University – School of Medicine, Detroit, Michigan, 6Kaiser Permanente Center for Health Research, Portland, Oregon

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Backgrounds. During the early stages of HIV infection, different epitopes of the gp41 transmembrane protein are targeted by antibodies that can interfere in this may be highly useful.

Results. In vitro, 6F11 and 7B6 did not bind any form. Interestingly, 4E4 specifically captured both repeats can form the post-fusion six-helix-bundle.

Conclusion. If targeting these epitopes correlates with the LTNP state, then these sites may be highly significant as targets of therapeutics or in vaccine strategies. Further studies on a larger cohort of LTNPs are ongoing. Additionally, deep sequencing of antibody sequences are being done to explore the development of structural epitope targeting by this family of antibodies.

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642. B- and T-Cell Responses to Pneumococcal Polysaccharide and Protein Vaccine Antigens in Recently Diagnosed HIV-1-infected Patients

Lindsay K. Nicholson, MD1; Vibha Jha, PhD2; Edward M. Gardner, MD3; Jeremy Rahalka, MD3; Phineas Barros, BS2; Moon Lee, MD2; and Edward Morano, MD2

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Backgrounds. Prevention of severe HIV-1-associated pneumococcal infections may be optimized by the limited magnitude and function of vaccine-induced antibodies. Responses to the T-independent pneumococcal capsular polysaccharide (PPS) + T-dependent diphteria toxoid (DT) protein conjugate vaccine (PCV-13) may be influenced by CD4+ T follicular helper (TFH) cells which provide specific help for B-cell differentiation.

Methods. We immunized 22 control and 19 newly diagnosed HIV-1-infected adults with 610 CD4+ T cells/µl (range: 139–1,408) and 69,316 plasma HIV RNA (range: 232-806,936) on ART for 1–4 months with PCV13. We measured i) PPS-specific antibody-producing cells (ASC) by ELISPOT at Weeks 0 and 1, (ii) serum IgG to 11 PPS serotypes by multiplex ELISA, (iii) titers of opsonophagocytosis (OP) for four STs at Weeks 0 and 8, and (iv) numbers and activation (ICOS expression) of circulating TFH cells by flow cytometry at Weeks 0 and 1. Values were compared by ANOVA, paired and unpaired t and Mann–Whitney tests.

Results. The number of PPS-specific IgG, IgM and IgA ASC increased significantly from Weeks 0 to 1 post-PCV13 and to similar magnitude in both Controls and HIV+ subjects, returning to baseline by Week 8. Levels of serum PPS-specific IgG increased significantly from Weeks 0 to 8 for 10/11 vs. 7/11 STs in controls and HIV+ subjects, respectively, (P < 0.05), and to comparable levels. Similarly, OP titers increased significantly and similarly to each of four STs in both groups from Weeks 0 to 8. In contrast, although DT-specific IgG ASC increased from Weeks 0 to 1 in HIV+ and controls, these values were lower among HIV+ adults (P = 0.01). Consistent with these limited responses, a key regulatory molecule on TFH cells, elicitiated largely by T-dependent antigens (DT), was upregulated on cells from Control but not HIV+ at Week 1. Moreover, levels of HLA-DR, which drives TFH differentiation, were also lower among HIV+ 1 at Week 1.

Conclusion. Humoral responses to PPS are largely intact (ASC, serum IgG and killing function) with recently diagnosed HIV-1 infection, highlighting the importance of HIV-1 in the acquisition of immune responses to PPS.

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643. Coronal Artery Aneurysms Are Found on Blindingly Read Echocardiograms From Febrile Patients with and without Kawasaki Disease

Kunjil Desai, MD1; Eden J Rabinowitz, MD2; Elizabeth Mitchell, MD3; Denise Hayes, MD4; Ayukt Tugertimur, MD5; Elena Kwon, MD6; Preeta Dhanantwari, MD7; Nilanjana Misra, MBBS6 and Lori Levy Rubin, MD, FIDSA2, Pediatrics, Cohen Children’s Medical Center, New Hyde Park, New York, 2Pediatric Cardiology, Cohen Children’s Medical Center, New Hyde Park, New York, 3Pediatric Cardiology, Cohen Children’s Medical Center of New York, Northwell Health, New Hyde Park, New York

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Background. In 2017, the American Heart Association published new Kawasaki disease (KD) guidelines including echocardiographic (echo) criteria for diagnosis of incomplete KD (iKD). Echo is positive if >2 of 5 cardiac features (CA) are present. Echo criteria for KD are blind reviewed. To assess specificity of the American Heart Association criteria, blinded readers measured CA dimension in patients with KD and iKD and in febrile and healthy control patients.

Methods. This is a single-center retrospective study. De-identified echo clips of CA from patients age 0–10 years were reviewed independently and blindly by six pediatric cardiologists. KD and iKD diagnoses were based on clinical data and IVG treatment. Control groups were healthy patients evaluated for a benign murmur and febrile patients with fever ≥24 hours without a KD diagnosis or IVG treatment.

Conclusion. An echo was considered positive if the reading from at least one reader met AHA criteria for KD.