0.005 one sided) but not at 1 year (p = 0.34, two-sided). There was no significant difference in mortality rates between the EAP group and the control group.

Conclusions: Multiple transfusions raise the risk of secondary hemochromatosis, a risk factor for infections and increased mortality. Erythropoietin-assisted phlebotomy is a treatment to prevent the complications of iron overload in HSCT patients.

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SAFETY AND IMMUNOGENICITY OF HEAT-TREATED ZOSTER VACCINE (ZVHT) IN ADULTS WITH ALLOGENIC OR AUTOLOGOUS HEMATOPOIETIC STEM-CELL TRANSPLANTS (HCT)

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Background: Herpes zoster incidence is higher in patients with a hematopoietic stem cell transplant [HCT] (200 cases/1000 person-years) than in the general population (~3-5 cases/1000 person-years). A heat-treated zoster vaccine [ZVHT] was assessed in adults with allogeneic or autologous HCT.

Methods: Randomized, double-blind, placebo-controlled, multi-center Phase I study of a 4-dose ZVHT regimen (1 dose pre-HCT; 3 doses post-HCT), each ~30 days apart in adults ≥ 18 years with autologous (n = 50) or allogeneic (n = 50) HCT. In each group, 40 received ZVHT and 10 placebo (Pho). Blood was collected at baseline & ~28 days after each dose to measure (1) VZV antibody concentrations by glycoprotein enzyme-linked immunosorbent assay (gpELISA), and (2) varicella zoster virus (VZV) T-cell responses by interferon-gamma enzyme-linked immunospot (IFN-γ ELISPOT) assay. All vaccinated patients were evaluated for adverse events (AEs) through day 28 postdose 4. Immunogenicity analyses for both HCT groups were exploratory (no pre-specified hypotheses).

Results: ZVHT safety profile was similar to placebo. Injection-site adverse events (AEs) occurred in 15% of the ZVHT group and 10% of the Pho group. There were no reported vaccine-related serious AEs. No patients discontinued due to vaccine-related AEs. Herpes zoster (PCR positive) occurred in 1 ZVHT and 1 placebo patient (both autologous HCT patients). There were also 2 patients in the ZVHT group that had suspected HZ not confirmed by PCR (1 in each HCT group). No ZVHT recipient had a rash that was PCR positive for the vaccine strain of VZV.

At baseline, the VZV-specific gpELISA geometric mean titer (GMT) was 152 (90% CI: 107, 216) in allogenic HCT patients and 214 (90% CI: 147, 311) in autologous HCT patients. Both measures decreased Postdose 4: 139 (90% CI: 103, 189) and 196 (90% CI: 126, 305), respectively. VZV-IFN-γ responses are summarized in the table below.

Conclusion: 4 doses of ZVHT had an acceptable safety profile in patients undergoing HCT. Significant T-cell responses were elicited in patients undergoing autologous HCT, but not in patients undergoing allogeneic HCT.

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INCREASED RESTING ENERGY EXPENDITURE IS ASSOCIATED WITH FAILURE TO THRIVE IN SEVERE COMBINED IMMUNODEFICIENCY

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Introduction: Patients with Severe Combined Immunodeficiency (SCID) often suffer from failure to thrive (FTT) caused by chronic infections, poor energy intake and/or malabsorption. Increased resting energy expenditure (REE) might also contribute to FTT in these patients as it does in patients with other immune deficient states including HIV and malignancy.

Objectives: Our objectives were to measure REE (MREE) and determine if increased REE (hypermetabolism) is associated with FTT in SCID patients at diagnosis prior to bone marrow transplantation.

Study Design: REE was measured by indirect calorimetry in 26 patients with SCID, before BMT conditioning, at a single transplant center. Predicted REE (PREE) was determined by WHO standards. MREE >110% of PREE was classified as hypermetabolism. Other data collected at diagnosis included FTT status, infectious history, genotype, phenotype and the feeding methods used.

Results: Fifteen of 26 (57.7%) patients were FTT and 18/26 (69.2%) were hypermetabolic. Hypermetabolism occurred in 14/15 (91%) patients with FTT, while only 4/11 (36%) patients without FTT had hypermetabolism (P = 0.003). There was a significant difference between the MREE (455 ± 169 kcal) and the PREE (333 ± 106 kcal) (p < 0.0001). Hypermetabolism was significantly more common in those between the ages of 3-12 months. Logistic regression was performed to determine the probability of FTT using the MREE expressed as a percentage of the PREE for age and gender, adjusted for diabetes and pneumonia. An increased probability of FTT was found, if hypermetabolism was present, independent of diabetes and pneumonia. Eleven of 17 (65%) patients required nasogastric feeding and/or parenteral nutrition to meet their energy needs.

Conclusions: Hypermetabolism is common in patients with SCID in the pre-BMT period and may contribute to the development of FTT. The hypermetabolism in these patients may necessitate intensive nutrition support.

Table 1. Immunogenicity Results Summary

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Day 1 (baseline)

GMC: [28] 1.7 (6.6,28.4) [7] 4 (0.7,22.2) [3] 9.1 (5.2,15.9) [7] 8.6 (2.8,28.6)

Postdose 1

GMC: [29] 2.2 (1.4,4.2) [9] 1 (0.5,5.5) [24] 10.8 (5.3,22.3) [7] 4.3 (1.7,10.9)

GMFR: [20] 0.1 (0.0,0.3) [7] 0.2 (0.1,1.0) [20] 0.4 (0.2,0.9) [7] 0.5 (0.1,1.2)

Postdose 2

GMC: [27] 2.6 (1.5,4.4) [8] 1 (0.7,1.7) [25] 12.6 (5.6,28.4) [5] 4.8 (0.5,5.0)

GMFR: [20] 0.2 (0.2,0.4) [6] 0.4 (0.1,1.8) [18] 0.6 (0.3,1.2) [3] 1.2 (0.2,28.4)

Postdose 3

GMC: [22] 2.1 (1.0,4.3) [7] 0.9 (0.6,1.9) [27] 6.3 (3.0,12.3) [5] 3.2 (0.9,9.6)

GMFR: [14] 0.1 (0.0,0.5) [6] 0.3 (0.1,1.8) [21] 4.5 (1.7,11.7) [3] 0.6 (0.2,2.5)

Postdose 4

GMC: [26] 1.7 (1.5,4.9) [5] 0.5 (0.5,0.5) [24] 9.2 (7.0,18.9) [5] 4.9 (0.8,30.5)

GMFR: [17] 0.2 (0.1,0.5) [4] 0.2 (0.0,7.8) [19] 7.6 (2.7,21.7) [4] 0.5 (0.1,4.7)

N = number of patients vaccinated.

n = number of patients included in analysis.

GMC = geometric mean count.

GMFR = geometric mean fold rise from Day1 (baseline).