dry eye disease and decreased vision. Quantifying specific cytokine changes in tears may reveal biomarkers and future treatment targets for patients with oGVHD. METHODS/STUDY POPULATION: The goal of this study is to determine if cytokines can be measured in tears with the Isoplexis platform. This pilot validation study evaluates the tears of a patient with oGVHD utilizing the Isoplexis platform. The Isoplexis has specific advantages for tear samples including high-throughput analysis, and small sample requirements, but has yet to be validated in tears. A sample from normal and oGVHD patient tears were collected for comparison. Samples were analyzed on two separate backgrounds–standard Bovine Serum Albumin (BSA) background and artificial tears (ATs). The negative control was ATs and positive control was a concentrated cytokine solution. Analysis of 22 cytokines was performed. RESULTS/ANTICIPATED RESULTS: Analysis of 22 cytokines was performed. As expected, the cytokine levels of the ATs alone were below the limit of detection (LOD). The oGVHD patient tears showed elevated TNF-alpha, TNF-beta, perforin, MIP-1a, MIP-1β, MCP-1, IL2, IL4, IL5, IL-7A, IL9, IL-13, IL-15, IFN-γ, granzyme B, and GM-CSF with ATS background, but no cytokines above the LOD in the BSA background plate. The control tears had elevated IP-10. The elevated cytokines for the oGVHD patient corresponded to symptom severity and clinical findings. DISCUSSION/SIGNIFICANCE: These results suggest that using ATs as the background with the Isoplexis platform improves the sensitivity to detect tear cytokines. Findings of elevated IL-7A and GM-CSF in tears parallels literature findings for oGVHD. Further evaluation of samples will continue to validate the Isoplexis multiplex assay for tear cytokine analyses.

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Alterations in the fungal microbiome in ulcerative colitis

Sushrut Jangi[1], Katie Hsia[1], Naisi Zhao[1], Mei Chung[1], Khalid Algarrahi[1], Laleh Montaser Kouhsari[1], May Fu[1], Hannah Chen[1], Siddharth Singh[2], S. Michaud[1]
[1]Tufts Medical Center [2]University of California, San Diego
Dominique

OBJECTIVES/GOALS: Although gut fungi have been implicated in the immunopathogenesis of inflammatory bowel disease, the fungal microbiome has not been deeply explored across endo-histologic activity and treatment-exposure in ulcerative colitis. METHODS/STUDY POPULATION: Our retrospective cohort was derived from the Study of a Prospective Adult Research Cohort with Inflammatory Bowel Disease. We evaluated the fungal composition of fecal samples from 98 ulcerative colitis patients across endoscopic activity (n=43), endo-histologic activity (n=41), and biologic-exposure (n=98). Across all subgroups, we assessed fungal diversity and differential abundance of specific taxonomic groups. RESULTS/ANTICIPATED RESULTS: We identified 504 unique fungal amplicon sequence variants across the cohort of 98 patients, dominated by phylum Ascomycota. Compared to endoscopic remission, patients with endoscopic activity had an increased global fungus load (p DISCUSSION/SIGNIFICANCE: Endoscopic inflammation in ulcerative colitis is associated with altered fungal diversity driven by expansion of Saccharomyces and Candida compared to remission. The role of these fungal taxa as potential biomarkers and targets for personalized approaches to therapeutics in ulcerative colitis should be evaluated.

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Combining Cannabidiol with Prolonged Exposure Therapy for PTSD: Design and Methodology of a Pilot Randomized Clinical Trial

Casey Straud[1], John Roache[1], Bret Ginsburg[1], Rais Baig[2], Van King[1], Stacey Young-McCaughan[1], Alan Peterson[1]
[1]University of Texas Health Science Center at San Antonio [2]South Texas Veterans Healthcare System

OBJECTIVES/GOALS: There is increasing evidence that cannabidiol (CBD) has promising potential to treat PTSD. However, more research is warranted to fully understand the benefits of CBD for PTSD. This poster will describe the design and methodology of one of the first ever pilot RCTs examining CBD (vs. placebo) combined with prolonged exposure therapy for PTSD. METHODS/STUDY POPULATION: This study is an early Phase II double-blind, pilot RCT. Participants are 24 individuals 18-65 years old who meet DSM-5 criteria for PTSD on the CAPS-5 and were recruited from local hospitals and the community. Individuals complete a standardized baseline assessment with an independent evaluator to assess study eligibility. Participants who meet study inclusion are randomized to 18 days of CBD 250mg (BID) or placebo delivered in combination with 10-sessions Prolonged Exposure (PE) psychotherapy over 2 weeks. Individuals begin medication 3 days prior to beginning PE to ensure steady state. Participants complete self-report and biomarker outcomes at select timepoints during study participation, and are also asked to complete a 1-month follow-up assessment following treatment. RESULTS/ANTICIPATED RESULTS: This aims of this study are to: 1) examine the safety, feasibility, and PTSD symptom reductions associated with the combined intervention; 2) evaluate biomarkers associated with the endocannabinoid system and stress response; 3) determine the association between changes in biomarkers and PTSD symptoms following treatment. It is expected that CBD+PE will be safe and feasible, and that there will be a detectable signal of CBD vs. placebo in the reduction of PTSD symptoms. It is also anticipated that CBD will have higher levels of endocannabinoids and lower stress response levels compared to placebo. Lastly, we expect that greater changes in biomarkers will be associated with lower levels of PTSD severity following treatment. DISCUSSION/SIGNIFICANCE: Although there is growing interest in cannabinoids for psychiatric conditions, such as PTSD, controlled trials are limited and have yet to examine the proposed intervention for PTSD. If successful, this study will enhance the feasibility of a larger, adequately powered RCT to address immediate and long-term improvements for PTSD treatments.

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A novel truncating variant of EBF2 disrupts human adipocyte differentiation in lipodystrophy syndromes: an example of a discovery from a clinical translational pipeline

Maria C. Foss-Freitas[1], Noel Wys[1], Miriam Udler[2], Lynne Pais[2], Andre Monteiro da Rocha[1], Ormond A. MacDougald[1], Elif A. Oral[1], Tae-Hwa Chun[1]
[1]University of Michigan [2]Harvard Medical School

OBJECTIVES/GOALS: Aiming to better understand the molecular pathogenesis of familial partial lipodystrophy (PL), we initiated whole-exome sequencing for our patients with PL syndromes. A novel variant of early B cell factor 2 (EBF2) was identified. Here

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