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assessed. Gender distribution varied between sites, with 28% and 68% female graduates from KST and AZ respectively, p<0.001 (Table 1). Due in part to varied gender distribution at sites, overall research time averaged 13.9 months for men and 9.9 months for women (range 6-24 months). Women who had a child during fellowship had the least dedicated research time of all groups at a mean of 9.2 months. By graduation, trainees produced 10.9 manuscripts and 13.6 abstracts on average, with men producing 29.7 total research products compared to 17.8 for women, p=0.002. When normalized to research time, there was no significant difference between total research products of men and women. (Figure 1) Men with children before fellowship were the most productive, with a mean of 30.8 scholarly products, followed by men with no children at 22.0, and men who had children during fellowship at 21.0. Women who had children during fellowship, women with children before fellowship, and women without children produced a mean of 15.1, 16.8, and 21.3 scholarly products, respectively. There were no significant differences in research productivity between groups according to parenthood among men or women. Discussion: In our study, decreased research productivity of female compared to male fellows was accounted for by decreased research time. Personal decisions regarding training site, research tracks, and sacrifices for parental leave and caretaking likely underlie the gendered discrepancy in research time and ultimately productivity. As publications continue to mark success, further efforts are needed to expand support research opportunities for women.

Table 1. Research time and productivity according to training site and gender

| Gender | Average Research Months | Average Research Products (Manuscripts and abstracts) |
|--------|-------------------------|-----------------------------------------------------|
| Male   | 15.6 ± 0.4             | 31.9 ± 4.9                                         |
| Female | 9.9 ± 0.4              | 16.8 ± 3.3                                         |

* Statistically significant difference between proportion/female trainees at KST vs. AZ, p<0.001
** Statistically significant difference between average research time, p<0.001
*** Statistically significant difference between research time of male vs. female trainees, p<0.001
# Statistically significant difference between productivity of male and female trainees, p<0.002

Mo1017

BIAS AND ENDOSCOPY TURNOVER TIME IN A TERTIARY REFERRAL ACADEMIC CENTER ENDOSCOPY UNIT

Michael A Yu, Scott Iberburg, Vashali Patel

Introduction: Room turnover time (TOT) is a measurement of endoscopy unit efficiency and delays in procedures lead to wasted health care expenditures. Several factors have been identified to influence turnover time including communication, staffing, case complexity, and specific surgeon. Previous research has indicated stereotypes about perceptions of physicians based on their gender or experience. For instance, women in surgical subspecialties endure gender discrimination from conscious and unconscious bias, that produce obstacles to career development and lead to burnout. It is unclear if these biases affect work flow in an endoscopy unit. Here, we sought to evaluate if endoscopists gender or academic experience affected their endoscopy room turnover time.

Methods: We evaluated 2,917 patient and outpatient endoscopic procedures performed at our large academic tertiary care center between July 2019 and July 2021. TOT was calculated by taking the difference between a prior patient “out of room time” and the next patient “in room time”. TOT was averaged between July 2019 and July 2021. TOT was calculated by taking the difference between a prior patient “out of room time” and the next patient “in room time”. TOT was assessed. Gender distribution varied between sites, with 28% and 68% female graduates from KST and AZ respectively, p<0.001 (Table 1). Due in part to varied gender distribution at sites, overall research time averaged 13.9 months for men and 9.9 months for women (range 6-24 months). Women who had a child during fellowship had the least dedicated research time of all groups at a mean of 9.2 months. By graduation, trainees produced 10.9 manuscripts and 13.6 abstracts on average, with men producing 29.7 total research products compared to 17.8 for women, p=0.002. When normalized to research time, there was no significant difference between total research products of men and women. (Figure 1) Men with children before fellowship were the most productive, with a mean of 30.8 scholarly products, followed by men with no children at 22.0, and men who had children during fellowship at 21.0. Women who had children during fellowship, women with children before fellowship, and women without children produced a mean of 15.1, 16.8, and 21.3 scholarly products, respectively. There were no significant differences in research productivity between groups according to parenthood among men or women. Discussion: In our study, decreased research productivity of female compared to male fellows was accounted for by decreased research time. Personal decisions regarding training site, research tracks, and sacrifices for parental leave and caretaking likely underlie the gendered discrepancy in research time and ultimately productivity. As publications continue to mark success, further efforts are needed to expand support research opportunities for women.

Mo1018

THE TCELL RESPONSE TO SARS-COV-2 VACCINATION IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE IS OFTEN DEFICIENT IN ANTIBODY-RESPONDERS, AND AUGMENTED BY ANTI-TNF THERAPY

Dalin Li, Alexander Yu, Rebecca Elyanow, Rachel M. Gittelman, Heidi Chapman, John Prestko, Valenzy Poyzniykovych, Philip Debbas, Angela Mijukian, Arash A. Horizon, Kimia Sobhani, Susan Cheng, Ian M. Kaplan, Dermot P. Megovern, Akil Merchant, Gil Melmed, Jonathan G. Braun

Background: Vaccination against SARS-CoV-2 is a highly effective strategy to protect against infection, which is predominantly mediated by vaccine-induced antibodies. Postvaccination antibodies are robustly produced by those with inflammatory bowel disease (IBD) and even on immune-modifying therapies but are blunted by anti-TNF therapy. In contrast, T-cell response which primarily determines long-term efficacy against disease progression, is less well understood. We aimed to assess the post-vaccination T-cell response and its relationship to antibody responses in patients with inflammatory bowel disease (IBD) on immune-modifying therapies. Methods: We evaluated IBD patients who completed SARS-CoV-2 vaccination using samples collected at four time points (dose 1, dose 2, 2 weeks after dose 2, 2 weeks after dose 2). T-cell clonal analysis was performed by T-cell Receptor (TCR) immunosequencing. The breadth (number of unique sequences to a given protein) and depth (relative abundance of all the unique sequences to a given protein) of the T-cell clonal response were quantified using reference datasets and were compared to antibody responses. Results: Overall, 303 subjects were included (53% female, 5% with prior COVID) (Table): 53% received BNT262b (Pfizer) 42% mRNA-1273 (Moderna) and 5% Ad26Cov2 (J&J). The Spike-specific clonal response peaked 2 weeks after completion of the vaccine regimen (3- and 5-fold for breadth and depth, respectively); no changes were seen for non-Spike clones, suggesting vaccine specificity. Reduced T-cell clonal depth was associated with chronologic age, male sex, and immunomodulator treatment, and was preserved by anti-TNF biologic therapies. Increased clonal depth was associated with anti-TNF treatment (Figure). TCR breadth and depth were associated with vaccine type; after adjusting for age and gender, Ad26Cov2 (J&J) exhibited weaker metrics than mRNA-1273 (Moderna) (p=0.01 for each) or BNT262b (Pfizer) (p=0.056 for depth). Antibody and T-cell responses were only modestly correlated; while those with robust humoral responses also had robust TCR clonal expansion, a substantial fraction of patients with high antibody levels had only a minimal T-cell clonal response (Figure). Conclusion: Age, sex and select immunotherapies are associated with the T-cell clonal response to SARS-CoV-2 vaccines, and T-cell responses are low in many patients despite high antibody levels. These factors, as well as differences seen by vaccine type may help guide reimmunization vaccine strategy in immune-impaired populations. Further study of the effects of anti-TNF therapy on vaccine responses are warranted.

Mo1019

ANTIBODY-RESPONDERS, AND AUGMENTED BY ANTI-TNF THERAPY

WITH INFLAMMATORY BOWEL DISEASE IS OFTEN DEFICIENT IN THE TCELL RESPONSE TO SARS-COV-2 VACCINATION IN PATIENTS
Mo1019

THE IMPACT OF IBS ON SELF-REPORTED PHYSICAL AND MENTAL HEALTH DURING THE COVID PANDEMIC – A NORWEGIAN TWIN STUDY

Julia Künschke, Jennifer R. Harris, May-Bente Bengtson

Background: Irritable bowel syndrome (IBS) is a stress-sensitive gut-brain disorder. The outbreak of Covid-19 has influenced the level of stress and anxiety at least for some people. Individuals with IBS often report poor self-rated health (SRH), which also reflects psychological and social aspects of life and an overall sense of well-being. This population-based twin study evaluates whether the Covid pandemic has affected self-reports of abdominal symptoms of IBS and ratings of physical (p_SRH) and mental health (m_SRH) among individuals with IBS. Further, we calculate measures of twin similarity and correlations across traits to gain insights into the importance of genetic influences.

Methods: In July 2021, we invited 17198 twins from the Norwegian Twin Register to complete a questionnaire asking how the pandemic affected their health and well-being, including depression, perceived stress, loneliness, and physical and mental health conditions. Phenotypic, intraclass and cross-twin cross-trait correlations were computed for IBS and the health measures. Results: The majority of individuals with IBS reported no changes in abdominal pain or bowel disturbance during the pandemic. Nonetheless, they did report worse perceptions of health compared to those without IBS. Further findings revealed weak but significant associations between IBS and changes in perceived stress. Age was inversely related to ratings for p_SRH and m_SRH, with younger participants reporting that their mental and physical health worsened more than older participants. IBS retained significance as a predictor of worse m_SRH after accounting for depression and perceived stress (model 2, Table 2) [OR = 1.22 (1.00;1.50), Table 2]. The intraclass correlations for worse p_SRH and m_SRH were greater among monozygotic (MZ) than dizygotic (DZ) twins, which is consistent with genetic influences.

Conclusion: Abdominal symptoms of IBS did not change during the pandemic. However, IBS was predictive of worsening of m_SRH, not confounded by depression or perceived stress. These results underscore the role of psychosocial and emotional factors for mental health in IBS during the pandemic.

Results: The impact of IBS on self-reported physical and mental health during the Covid pandemic was significant. The majority of individuals with IBS reported no changes in abdominal pain or bowel disturbance during the pandemic. Nonetheless, they did report worse perceptions of health compared to those without IBS. Further findings revealed weak but significant associations between IBS and changes in perceived stress. Age was inversely related to ratings for p_SRH and m_SRH, with younger participants reporting that their mental and physical health worsened more than older participants. IBS retained significance as a predictor of worse m_SRH after accounting for depression and perceived stress (model 2, Table 2) [OR = 1.22 (1.00;1.50), Table 2]. The intraclass correlations for worse p_SRH and m_SRH were greater among monozygotic (MZ) than dizygotic (DZ) twins, which is consistent with genetic influences.

Conclusion: Abdominal symptoms of IBS did not change during the pandemic. However, IBS was predictive of worsening of m_SRH, not confounded by depression or perceived stress. These results underscore the role of psychosocial and emotional factors for mental health in IBS during the pandemic.

| Table 1: Overview of the sample |
|--------------------------------|
| Measure | Cases, N (%) | Probable diagnostic criteria, % | Intraclass correlations | Cross-twin cross-trait correlations with IBS (rM) |
|---------|--------------|-------------------------------|------------------------|-----------------------------------------------|
| p_SRH   | 303 (56.0%)  | 303 (56.0%)                  | 0.15                   | 0.04                                           |
| m_SRH   | 303 (56.0%)  | 303 (56.0%)                  | 0.15                   | 0.04                                           |

Results: The impact of IBS on self-reported physical and mental health during the Covid pandemic was significant. The majority of individuals with IBS reported no changes in abdominal pain or bowel disturbance during the pandemic. Nonetheless, they did report worse perceptions of health compared to those without IBS. Further findings revealed weak but significant associations between IBS and changes in perceived stress. Age was inversely related to ratings for p_SRH and m_SRH, with younger participants reporting that their mental and physical health worsened more than older participants. IBS retained significance as a predictor of worse m_SRH after accounting for depression and perceived stress (model 2, Table 2) [OR = 1.22 (1.00;1.50), Table 2]. The intraclass correlations for worse p_SRH and m_SRH were greater among monozygotic (MZ) than dizygotic (DZ) twins, which is consistent with genetic influences.

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Mo1020

GUT MICROBIOME CHANGES ASSOCIATED WITH HIGHER AND LONGER-LASTING ANTIBODY TITERS FOLLOWING COVID-19 VACCINATION

Microus M. Venzon, Luke Newell, Jonas Schluter, Jordan E. Axelrad

Background: COVID-19 associated gut microbiome dysbiosis has been strongly linked to more severe disease and has most recently been shown to persist long after symptomatic recovery. While studies have corroborated the depletion of gut commensals, like Faecalibacterium and Bifidobacterium, to disease severity, little is known about specific microbes that may be protective against disease, especially in the context of vaccination against SARS-CoV-2. We aimed to characterize changes in the gut microbiota following COVID-19 vaccination and associate them with antibody titers against SARS-CoV-2.

Methods: We obtained paired stool samples from a cohort of 8 patients, the first sample taken within 10 days before the beginning of their COVID-19 mRNA vaccine series and the second taken within 10 days after their second vaccine. 16S rRNA gene sequencing and principal coordinate analysis were performed. In parallel, blood samples were also collected at 1, 3, 6, and 12 months to enumerate serum IgG antibody titers. Patients were stratified into 2 groups—medium and high—based on IgG titers following vaccination, wherein the 'high' response group maintained significantly higher titers beyond 6 months follow-up. We used linear discriminant analysis (LDA) to estimate which microbes significantly differed at baseline between the 2 response groups. Results: The gut microbiome composition differed before and after vaccination for all patients, with medium responders showing significant differences by both Bray-Curtis dissimilarity (p = 0.04, pairwise PERMANOVA) and unweighted UniFrac (p = 0.03, pairwise PERMANOVA) beta diversity metrics (Figure 1). While differences within high responders were non-significant. The most abundant families present before vaccination in all subjects included Lachnospiraceae, Bacteroidaceae, Ruminococcaceae, and Enterobacteriaceae. Following vaccination, a stark contraction in the relative abundance of the family Bacteroidaceae occurred in all subjects, and in the majority of cases was accompanied by a concomitant increase in the abundance of Lachnospiraceae. The relative abundances of Ruminococcaceae, Bifidobacteriaceae, and Streptococcaceae were also increased in the majority of post-vaccination samples.

Conclusion: These findings demonstrate an association between the gut microbiota and COVID-19 immunity and highlight a potential link between specific taxa and the strength of humoral responses following vaccination.

Figure 1: Microbiomes of medium titers response group before vaccination are significantly different from those of the medium titers response group after vaccination by both Bray-Curtis (p = 0.04) and UniFrac (p = 0.03) beta diversity metrics, and cluster separately by PCA. Subjects were assigned to high/titer response group based on maintenance of significantly higher IgG titer beyond 6 months follow-up compared to medium titer response group (p=0.03).

Figure 2: Linear discriminant analysis effect size (LDA) score accounting high-middle/low pre-vaccination samples reveals 2 taxa present in baseline samples that are significantly associated with high titer response group: Bifidobacteriales, Lachnospiraceae.