INTRODUCTION: Endogenous hyperinsulinemia increases the risk of colorectal cancer (CRC) among patients with type 2 diabetes mellitus (T2DM). Exogenous insulin therapy, used by 30% of T2DM patients, further increases systemic levels of insulin and has been shown to increase the risk of CRC in animal models. We sought to evaluate the effect of exogenous insulin therapy on the incidence of advanced adenoma in T2DM patients.

METHODS: We conducted a retrospective cohort study among patients with T2DM aged 40–80 at a tertiary healthcare center. Among other inclusion/exclusion criteria (Figure 1), eligible patients must have undergone 2 rounds of colonoscopy examinations – a baseline colonoscopy and a follow-up (index) colonoscopy $1 year later. Primary outcome was incident advanced adenomas at index colonoscopy. Primary exposure was long-term ($1 year) insulin therapy before index colonoscopy. Assuming a 50.05, background advanced adenoma incidence of 5%, and prevalence of insulin therapy among T2DM of 20%, a cohort size of 865 would be required to have 90% power to detect a 7.5 percentage point increase in advanced adenoma incidence among long-term insulin users. Multivariable logistic regression was used to estimate the odds ratio (OR) and 95% confidence interval (CI).

RESULTS: Among patients with $1 diagnostic code for DM and $2 colonoscopy procedure codes, we randomly selected 1,900 patients for chart review and identified 867 eligible patients (Figure 1). Except for BMI, baseline characteristics between short-term/non-insulin users versus long-term insulin users were not significantly different (Table 1). Characteristics of the baseline and index colonoscopies were similar between the two groups (Table 1). Incidence of advanced adenoma at index colonoscopy was higher among the long-term insulin users versus short-term/non-insulin users ($1 versus 4.7%, chi2 P0.001). Long-term insulin use was also associated with increased risk of having $3 adenomas (adjusted OR 2.8, 95% CI 1.4–5.4) and having $1 right-sided advanced adenoma (adjusted OR 6.9, 95% CI 3.5–13.8) at index colonoscopy.

CONCLUSION: Chronic insulin therapy was associated with increased risk of advanced adenoma occurrence in T2DM patients. This novel observation is important for developing a risk-tailored approach to the use of colonoscopy in CRC screening/surveillance in patients with T2DM.

INTRODUCTION: Studies have demonstrated antitumor or anti-inflammatory properties of calcium and vitamin D. Dietary calcium and vitamin D intake has been associated with lower risk of colorectal cancer. However, the effect of calcium and vitamin D intake on gut microbiota is not well understood.

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CONCLUSION: Chronic insulin therapy was associated with increased risk of advanced adenoma occurrence in T2DM patients. This novel observation is important for developing a risk-tailored approach to the use of colonoscopy in CRC screening/surveillance in patients with T2DM.
METHODS: This is a cross-sectional study of 99 colorectal biopsies of 35 individuals (average age 62 years, 77% Caucasian and 1 woman) with poly-free colonoscopy between August 2013 and April 2017 at Michael E. DeBakey VA Medical Center. Microbial DNA was isolated and the V4 region of the 16S rDNA gene was amplified then sequenced for microbial profiling. A food frequency questionnaire was used to ascertain calcium-adjusted calcium and vitamin D intake. Median intake was used to dichotomize the intake to low vs. high. Sequencing data were analyzed using the UPARSE and SILVA database for operational taxonomic unit (OTU) classification. Alpha-diversity (Shannon index), beta-diversity (weighted UniFrac) and relative abundance of bacteria (Mann-Whitney test) were compared between low vs. high intake. Reported P-value was adjusted for multiple comparisons using false discovery rate (FDR).

RESULTS: Compared with lower intake, higher dietary calcium and vitamin D intakes were both associated with greater richness and evenness (P < 0.05). The community composition also differed by calcium and vitamin D intake (P < 0.001). In phylum level, the relative abundance of Verrucomicrobia was greater in individuals with higher calcium and vitamin D intake (P < 0.005). In genus level, high consumption of both calcium and vitamin D were associated with a significantly higher relative abundance of Akkermansia, Faecalibacterium, Dialister, Haemophilus, Odoribacter, Fusibacter and Paraprevotella, but a lower abundance of Erysipelotrichaceae and Lachnospiraceae (FDR P-values < 0.05). Higher intake of calcium, but not vitamin D, was also associated with lower abundance of Bacteroidetes and higher abundance of Parabacteroidetes (P-values = 0.02).

CONCLUSION: Higher intake of calcium and vitamin D was associated with a higher diversity of colonic microbiota and higher abundance of potentially beneficial bacteria and lower abundance of harmful bacteria in healthy individuals. Further metagenomics and metabolomics research are needed to understand whether and how the protective effect of calcium and vitamin D on colorectal cancer is partially mediated through gut microbiome.}

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Helicobacter pylori Infection Increases the Risk of Colorectal Polyps: A Large Scale Case Control Study

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INTRODUCTION: Persistent Helicobacter pylori (H. pylori) infection begins during childhood and can cause peptic ulcers and gastric cancer. It can also cause extra-gastric organ disease, including idiopathic thrombocytopenic purpura. Although some studies have indicated a correlation between H. pylori infection and the risk of colorectal neoplasms, these findings have not been consistent and are controversial. This case-control study aimed to investigate the association between H. pylori-associated endoscopic gastric mucosal atrophy (GMA) and colorectal polyp occurrence.

METHODS: Records of 7394 participants who underwent colonoscopy examinations from August 2013 to July 2018 were reviewed retrospectively. Saved images of endoscopic examinations were used to evaluate the colorectal polyps and GMA. Adjusted odds ratios for predictors of colorectal polyps were computed by using the multiple logistic regression model.

RESULTS: A total of 2404 subjects were registered; 1565 (65.1%) were in the GMA-positive group. Group one (1) included patients who were not exposed to antiplatelet/anticoagulant medications such as clopidogrel or other antiplatelet agents, warfarin, direct thrombin inhibitors were included in the model. Records of 7394 participants who underwent colonoscopy examinations from August 2013 to July 2018 were reviewed retrospectively. Saved images of endoscopic examinations were used to evaluate the colorectal polyps and GMA. Adjusted odds ratios for predictors of colorectal polyps were computed by using the multiple logistic regression model. A total of 2404 subjects were registered; 1565 (65.1%) were in the GMA-positive group. Group one (1) included patients who were not exposed to antiplatelet/anticoagulant medications such as clopidogrel or other antiplatelet agents, warfarin, direct thrombin inhibitors were included in the model.

CONCLUSION: Persistent H. pylori infection begins during childhood and can cause peptic ulcers and gastric cancer. It can also cause extra-gastric organ disease, including idiopathic thrombocytopenic purpura. Although some studies have indicated a correlation between H. pylori infection and the risk of colorectal neoplasms, these findings have not been consistent and are controversial. This case-control study aimed to investigate the association between H. pylori-associated endoscopic gastric mucosal atrophy (GMA) and colorectal polyp occurrence.

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RESULTS: Compared with lower intake, higher dietary calcium and vitamin D intakes were both associated with greater richness and evenness (P < 0.05). The community composition also differed by calcium and vitamin D intake (P < 0.001). In phylum level, the relative abundance of Verrucomicrobia was greater in individuals with higher calcium and vitamin D intake (P < 0.005). In genus level, high consumption of both calcium and vitamin D were associated with a significantly higher relative abundance of Akkermansia, Faecalibacterium, Dialister, Haemophilus, Odoribacter, Fusibacter and Paraprevotella, but a lower abundance of Erysipelotrichaceae and Lachnospiraceae (FDR P-values < 0.05). Higher intake of calcium, but not vitamin D, was also associated with lower abundance of Bacteroidetes and higher abundance of Parabacteroidetes (P-values = 0.02).

CONCLUSION: Higher intake of calcium and vitamin D was associated with a higher diversity of colonic microbiota and higher abundance of potentially beneficial bacteria and lower abundance of harmful bacteria in healthy individuals. Further metagenomics and metabolomics research are needed to understand whether and how the protective effect of calcium and vitamin D on colorectal cancer is partially mediated through gut microbiome.

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Analysis of Antiplatelet/Anticoagulant Agents Exposure in Patients With Positive Fecal DNA Test

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INTRODUCTION: There have been no published studies to evaluate if anticoagulants/anti-platelet agents can affect the results of the stool DNA test.

METHODS: A retrospective chart review of 1413 patients who had a positive stool DNA follow-up documented colonoscopy was performed. Two patients were excluded because of finding of “other carcinoma.” Attention was given to the patient’s medication list at the time of the test. All patients on clopidogrel or other antiplatelet agents, warfarin, direct thrombin inhibitors were included in the analysis and patients on aspirin were excluded. Patients who met the inclusion criteria were divided in 2 groups. Group one (1) included patients who were not exposed to antiplatelet/anticoagulant therapy while group two (2) included patients who were exposed to at least 1 antiplatelet/anticoagulant therapy. Only the index lesion was recorded. Advanced adenoma was defined as an adenoma that is larger than 10 mm or had high risk features such as villous transformation or high grade dysplasia. Non-advanced adenoma was defined as an adenoma that is smaller than 10 mm and had no high-risk features. Statistical analysis with Chi-square and Fisher exact was done to compare the proportions. P-value < 0.05 was considered to be statistically significant.