Abstract 19

A national study of IBD patients diagnosed with prostate cancer: The microbiome link and prevalence

Hashemipour, Reza[1]; Ghavimi, Shima[1]; Nasir, Umair M.[1]; Azimi, Hamed[1]; Choi, Catherine[1]; Jiang, Yi[1]; Shulik, Oleg[2]; Navabi, Ehsan[1]

Introduction: There is limited data exploring the risk of prostate cancer (Pca) in patients diagnosed with inflammatory bowel disease (IBD).

AIM: To compare the incidence of Pca in men with Ulcerative colitis (UC) versus Crohn's disease (CD).

Method: Data from the years 2009 to 2014 were collected using the National Inpatient Sample database. Patients with prostate cancer were evaluated for UC and CD patients against case-controls. Results were adjusted via binary logistic regression analyses. IBM Statistical Package for the Social Sciences (SPSS) was used for statistical analysis. Microbiome toxicology results were obtained via the NCBI Taxonomy date base and analysis was done using R and SPSS.

Results: We examined 134916 patients diagnosed with IBD of which 4103 were diagnosed with prostate cancer. PCa prevalence was 51.2% among men with UC and 48.8% in patients with CD ($p<0.001$). While the most abundant microbiome genera across all Pca patients included Escherichia, Propionibacterium, and Pseudomonas, the core prostate tumor microbiota was abundant in Proteobacteria. UC patients had a lower proportion of Firmicutes and an increase in Gammaproteobacteria. For CD patients, the Lachnospiracae and Ruminococcaceae families were decreased, whereas Ruminococcus family was increased.

Conclusion: Men with IBD had higher rates of clinically significant PCa. Our investigation suggested that men with UC had a higher prevalence of prostate cancer versus patients with CD. Our study provides evidence for the presence of a core, bacteria-rich, prostate microbiome. The increased bacterial content and richness within the UC and CD microbiomes, together with elevated tumor mutational burden, suggests a bacteria-driven oncogenesis process. In patients with CD at the phylum level, we found Proteobacteria to be significantly more abundant. Microbiota dysbiosis may affect the intestinal mucosal immune system and, in turn, immune system dysfunction may cause Pca. More research needs to be done in both groups with prostate cancer.