Mapping the gut microbiome in patients with small intestinal neuroendocrine tumors

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Background
• Carcinoid syndrome (CS): a debilitating endocrine complication of metastatic small intestinal neuroendocrine tumors (SI-NETs)
• Little progress in uncovering drivers and treatment options
• Microbiome research has uncovered novel treatment targets in other cancers
• Enterochromaffin cells communicate with bowel content, including microbial species and their secreted molecules

Aim
• To map the gut microbiome of SI-NET patients and its association with CS

Methods
• Collection of fecal samples of SI-NET patients and controls
• Questionnaires and electronic health records
• Microbiome analysis through 16S sequencing

Results
• 87 patients (53 with the CS), 95 controls
• CS vs no CS
  • Similar microbial richness and distribution
  • No differentially abundant species
• SI-NET patients vs controls
  • Patients had a less rich and diverse microbiome
  • Different microbial distribution
  • 14 species more abundant in patients
  • 28 species more abundant in controls

Conclusions
• No association between the gut microbiome and the presence of CS was found
• The gut microbiome of SI-NET patients was different from that of controls
• Potentially oncogenic and protective bacteria were identified
• Current efforts focus on a SI-NET microbial signature, metagenomics and metabolomics