INTRODUCTION

- Colorectal cancer (CRC) is the third leading cause of cancer-related deaths, affecting many men and women.
- Since the 1990s, overall CRC in the United States have declined due to increased screening measures and frequency in patients 50 years and older.
- However, incidences of CRC in patients younger than 50 years of age have exhibited an upward trend (1).
- Although molecular differences have been observed between early and late-onset CRC, there are few studies on the causes and characterizations of early-onset CRC.
- Exposure to carcinogens along with certain lifestyle habits, are established risk factors for CRC (2).

HYPOTHESIS

- CRC risk factors are closely associated with the exposome and the duration and amount of exposure to environmental carcinogens. By investigating the general external environment across early versus late-onset cases, key risk factors for early-onset CRC can be further elucidated.

MATERIALS & METHODS

- Epic database: Used for collection of clinical and demographic patient information
- ATTACC Environmental Survey: REDCap survey conducted across early, mid, and late-onset CRC patients, assessing multiple forms of carcinogen exposures and environmental or workplace conditions (n=857)
- RStudio: For analysis of data gathered from Epic and the ATTACC survey. Used to generate graphs and run statistical tests.

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RESULTS & DISCUSSION

- Exposure to carcinogens (gasoline) and the practice of certain lifestyle habits (smoking) are associated with the development of later-onset CRC cases compared to that of early or mid-onset CRC.
- There was a larger number of CRC patients who did not live in heavily industrialized areas, compared to those who lived in heavily industrialized areas.
- Early-onset CRC groups displayed the least exposure to or active use of carcinogens across their lifetime.
- It should be noted that data and results may be biased. Late-onset CRC patients (ages>60), may have had longer exposure times due to greater age than compared to early-onset CRC patients.
- Data may also be biased due to inaccurate recall of retrospective exposure and usage of carcinogens from human subjects.
- Since this is a case-case design rather than a case-control design, results were not measured against a control group.
- Our study suggests that exposome results alone are not sufficient to reveal differences between early and late-onset CRC. Further research needs to be conducted on other risk factors or clinical/molecular characterizations to uncover the main drivers of early-onset CRC.

REFERENCES