Analysis of Trends in Early-Onset Colorectal Cancer Rates using Data from the Texas Cancer Registry 1995-2017

Varun S. Rao¹, Jennifer S. Davis², Hui Zhao³, E. Scott Kopetz¹

¹Department of Gastrointestinal Medical Oncology, Division of Cancer Medicine, The University of Texas MD Anderson Cancer Center; ²Department of Epidemiology, Division of Cancer Prevention and Population Sciences, The University of Texas MD Anderson Cancer Center; ³Department of Health Services Research, Division of Cancer Prevention and Population Sciences, The University of Texas MD Anderson Cancer Center

Background

- Early-onset cases (EOCRC) have grown at an annualized rate of 1.6% since the mid-1990s²
- Over the same period, there has been a significant decrease in rate of later-onset cases
- Early-Onset cases tend to present at advanced stages²-⁶
- Cases present without conventional risk factors²-⁶
- The etiology of EOCRC remains unknown
- The distribution and trends of EOCRC within Texas are unknown

Methods

Data Sources:
- Cases were sourced from the Texas Cancer Registry (TCR) between 1995-2017
- Population demographic data was pulled from IPUMS NHGIS⁸
- Cases were sourced from the Texas Cancer Registry between 1995-2017
- Analysis of Trends in Early-Onset Colorectal Cancer Rates using the NCI Age Period Cohort (APC) Web Tool was used to examine birth cohort effect, with risk declining in persons born between 1950-1954 and increasing in those born after 1970.

Analysis:
- Univariate statistical analysis was conducted using SAS, Version 9.4
- Linear regression of rates was performed in SAS and GraphPad Prism
- Univariate statistical analysis was conducted using SAS, Version 9.4

Results

- From 1995-2017, the rate of all CRC cases (blue line, β = -0.251 cases/yr/100,000, p < 0.001) and late-onset cases (brown line, β = -0.304 cases/yr/100,000, p < 0.001) have significantly declined. In contrast, the rate of early-onset cases increased significantly (green line, β = 0.053 cases/yr/100,000, p < 0.001), corresponding with an annual increase of 1.5%.

- The EOCRC rate increase differed across Texas, with largest APCs noted among regions having higher proportions of Hispanics (southern and western Texas) and higher prevalence of childhood obesity (southern Texas)⁹
- Increase in CRC risk by birth cohort is indicative of changes in cumulative exposure to CRC risk factors since the 1970s
- Although the difference in EOCRC rate increase between Hispanics and non-Hispanics is not statistically significant, the average annual percent rate change differs. This could be an artifact of variability in year-to-year case counts, or it could suggest differences in risk factor exposure between Hispanics and non-Hispanics
- There is suggestive evidence of a difference in EOCRC rate increase comparing men and women
- This study provides direction for longitudinal research exploring causal linkages

Conclusions

- There are differential trends in EOCRC by region, with the largest APCs noted among regions having higher proportions of Hispanics (southern and western Texas) and higher prevalence of childhood obesity (southern Texas)¹⁰

References

7. Rosenberg PS et al. (2014). Cancer Epidemiology, Biomarkers Prevent. 23:2296, PMID: 25146089