ASCO: Technology, Socioeconomic Factors Can Influence Colorectal Cancer Outcomes

Highlights from the over 400 abstracts related to colorectal cancer presented at The American Society of Clinical Oncology's annual meeting

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The American Society of Clinical Oncology held their annual meeting from June 4-8, 2021, where over 400 abstracts related to colorectal cancer (CRC) were presented. We at the Colon Cancer Foundation highlight some notable ones related to technological advancements, socioeconomic factors, and clinical care below.

Technological Advancements:

1. Using AI to Predict CRC progression: What if artificial intelligence (AI) could be used to predict disease progression and mortality in patients with metastatic CRC? That is the question Carlos Maria Galmarini presents in their abstract. By using patient datasets from two randomized phase III clinical trials, Galmarini and team created synthetic "fingerprints" (SFs) for each patient by integrating 44 various clinical features. These SFs were subsequently inputted into a deep learning framework (DLF) to categorize patients based on similarities. The SF/DLF system was able to categorize metastatic CRC into different subtypes based on clinical features that correlate with higher risk of disease progression and mortality, indicating that AI could prove beneficial to the cancer community.

1. Using miRNA and Machine Learning to Detect Cancer: Circulating microRNA (miRNA) have been associated with certain types of cancers, and their expression profiles are theorized to be cancer biomarkers. As such, Juntaro Matsuzaki and team investigated whether the combination of a novel diagnostic blood test and machine learning techniques could be used as a tool for the early detection of cancer. By processing the serum samples from individuals without cancer and comparing it to individuals with breast, colorectal, lung, stomach, and pancreatic cancer respectively, the team analyzed the entire miRNA expression profile of the samples using next generation sequencing. The expression profile was then used to train machine learning models. The diagnostic model showed an 88% accuracy for all five cancer types, indicating that circulating miRNAs can be useful biomarkers for the early detection of these cancers.

Socioeconomic Factors:

1. Intersection of Race & Rurality in CRC Surgical Treatment & Outcomes: It is widely known that

racial disparities exist when it comes to CRC care, but the intersection of rurality and race on surgical treatments and outcomes among patients with nonmetastatic CRC has not been fully explored. To fill this knowledge gap, Niveditta Ramkumar and team studied 57, 710 Medicare patients who underwent surgery for non-metastatic CRC between 2016 and 2018. The patients were categorized by their race and area of residence, which was classified as metropolitan, micropolitan, and small/rural. Results showed that Hispanic patients and other minorities living in non-metropolitan areas had higher odds of facing 90-day surgical complications compared to individuals living in metropolitan areas. There was no such disparity found for white patients. Additionally, patients from minority groups had higher odds of 90-day mortality in rural areas compared to metropolitan areas, while white patients had lower odds. These results indicate the necessity to further explore the intersection of race and rurality when it comes to CRC treatment and outcomes so that specific guidelines can be enacted to protect patients belonging to vulnerable socioeconomic groups.

1. Impact of Socioeconomic Status on CRC Care: Socioeconomic factors are known to affect CRC care at all levels, but the research surrounding this topic is limited and conflicting. Therefore, Rajan Shah and team set out to explore how socioeconomic status (SES) affects CRC stage at presentation, receipt of diagnostic imaging and treatment, and overall survival. To meet this end, the team identified and analyzed data from 39,802 colon cancer and 13,164 rectal cancer patients in Canada using the Ontario Cancer Registry. In both cohorts, patients of lower SES were more likely to present at a higher stage, less likely to receive MRIs and other diagnostic tests and treatments, and had a less likely chance of overall survival. These results indicate the importance of focusing on CRC patients of lower SES to eradicate disparities in CRC care.

Clinical Care:

1. Access to Cancer Care for Medicaid Patients: According to the abstract presented by Victoria A. Marks, one in five Americans are insured with Medicaid. However, the large number of Medicaid patients does not necessarily indicate an increased access to care at Medicaid facilities. Thus, the team investigated the acceptance of Medicaid patients with new cancer diagnoses at various facilities across the U.S. They evaluated access to cancer care for a variety of cancer types (colorectal, breast, urologic, and skin) at hospitals accredited by the Commission on Cancer, and used data from the American Hospital Association and Centers for Medicare & Medicaid Services to study Medicaid access. Results showed that Medicaid acceptance was lowest in for-profit facilities and comprehensive cancer community centers. In hospitals that accepted Medicaid, only 68% of them accepted all four cancer types. These results suggest there are disparities that need to be addressed in regard to cancer care access for Medicaid patients, both between and within facilities.

1. Influence of Fellowship Training on CRC Post-Operative Outcomes: Christopher Thomas Aquina and team set out to investigate the relationship between fellowship training and surgical outcomes in CRC patients. Using two New York-based patient databases, the team identified patients who underwent stage I-III colorectal adenoma resection between 2004 and 2014. They analyzed the relationship between patient surgical outcomes and surgeon certification via the American Board of Colorectal Surgery. High volume colon surgeons (HVCS) were identified as those who performed more than 15 colon cancer resections annually, and high volume rectal surgeons (HVRS) were identified as those who performed more than 10 annual rectal resections. Results showed that patients with board-certified, HVC/HVR surgeons had better outcomes post-surgery and were

associated with improved survival following resection. This suggests that individuals seeking CRC resections should go to board-certified, HVC/HVR surgeons for the best chance of recovery and survival.

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