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Study shows colorectal cancer genetically different in older and younger patients

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While the overall rate of colorectal cancer (CRC) is declining, CRC specifically among young patients is increasing. Previous studies have shown that CRC in patients younger than 50 years old tends to be more aggressive than CRC in older patients. A University of Colorado Cancer Center study published in conjunction with the American Society for Clinical Oncology (ASCO) Annual Meeting 2015 offers early evidence of genetic differences between CRC in young and old patients, possibly pointing toward different treatments and strategies in combating the young form of the disease.

"We saw differences in two important gene signaling pathways, PPAR and IGF1R, which are involved in regulating cell development, metabolism, and growth," says Christopher Lieu, MD, investigator at the CU Cancer Center and assistant professor of medical oncology at the University of Colorado School of Medicine.

Alterations in these signaling pathways have been implicated in the development of several types of cancer.

The study compared the genetics of 5 colorectal cancer tumors from younger patients (median age 31) to 6 tumors from older patients (median age 73), sequencing 45 million "reads" from each tumor. The group then explored the data for significant differences between groups. In addition to the pathways PPAR and IGF1R, the study showed that younger CRC tumor samples were enriched for pathways responsible for metabolizing drugs.

"Chemotherapies challenge cancer cells and younger people may metabolize these chemotherapies differently than older patients. This may explain why our traditional chemotherapy treatments may be less effective for younger patients with metastatic colorectal cancer," says Todd Pitts, MS, research instructor in the Developmental Therapeutics Program at the CU Cancer Center, and the study's lead author. (Pitts notes that this hypothesis will require additional exploration.)

The group plans to validate the finding of these differences in a larger patient population. Then, if PPAR and/or IGF1R prove to in fact be important drivers of CRC in young patients, the group hopes to explore trials of drugs targeting these potential tumor drivers. Toward this goal, the group has gathered the important resource of tumor samples grown from the tissues of young CRC patients, allowing further preclinical genetic and drug testing.

"If I were to shoot for the stars, I would say that our end goal is to be able to offer better treatments for this population of young colorectal cancer patients that seems to be at higher risk from the disease," Lieu says.

More information:
abstracts.asco.org/156/AbstView_156_150460.html

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