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Genetic polymorphisms and survival times in colorectal cancer patients

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Abstract

The 5-year survival rate for colorectal cancer is ~60-65% in North America. Stage of the disease and age of the patient at the time of diagnosis are well-known prognostic indicators. However, in addition to these factors, there may be others, such as genetic factors that may modify the patient survival.

To test this hypothesis, in collaboration with the Newfoundland Colorectal Cancer Registry (NFCCR), our laboratory focuses on investigating the correlations of genetic polymorphisms with clinical outcome in colorectal cancer patients.

So far, our results showed that several genetic polymorphisms were associated with survival times of colorectal cancer patients. For example, a polymorphism in the *MTHFR* gene was associated with overall survival (OS) in two separate colorectal cancer cohorts (Negandhi et al. *in preparation*). The MTHFR protein has biological roles in metabolism of folate as well as 5-fluorouracil, a drug commonly used in treatment of colorectal cancer. Associations of polymorphisms in the *SLC6A4* gene with OS were also detected (Savas et al. PLoS One, 2012). This gene codes for the serotonin transporter protein that may have roles in systemic inflammation and risk of depression. We also found the associations of polymorphisms from two genes regulating the cellular response to hypoxic conditions with OS (Haja Mohideen et al. *in preparation*).

We are currently in the process of replicating these positive associations in additional colorectal cancer patients. Once our findings are replicated, our future studies will focus on investigating the biology behind these polymorphisms and their effect on survival of colorectal cancer patients.

Biography

Sevtap Savas obtained her PhD in Molecular Biology and Genetics in 1999 from the Bogazici University, Turkey. She then trained as a post-doctoral fellow and research associate in Louisiana State University (USA), Mount Sinai Hospital Research Institute (Canada) and Princess Margaret Hospital/Ontario Cancer Institute (Canada). She has been an assistant professor at Discipline of Genetics, Memorial University of Newfoundland (Canada) since 2008. Her research program currently focuses on genetic prognostic studies in colorectal cancer and development of public databases using genetic, epidemiological, biostatistical and computational approaches. She also serves as a reviewer and editorial board member for several scientific journals.