Researchers make progress in the identification of new biomarkers for the prevention of colon cancer

July 1 2015

Scientists from the Instituto de Investigación Biomédica (IBI) [Institute of Biomedical Research], in Galicia (Spain), have made progress in the identification of new biomarkers for improving prevention of colorectal cancer.

Biomarkers or biological markers are molecules or substances that act as indicators of a biological state, whether it is normal, pathological or a response to pharmacological treatment. In this project, the researchers are working to find molecular biomarkers present in the mucosa of the colon or in blood, saliva or other biological fluids. Such biomarkers would make it possible to distinguish, as accurately as possible, those patients with cancerous lesions and those with non-cancerous ones, thereby, minimizing the possibility of diagnostic errors.

In addition to the benefits of early diagnosis for patients, the application of these new tools may, in the future, constitute an important saving in health expenditure, as some additional tests and surgical interventions would not be required thanks to the reduction of false positives.

In Spain, colorectal tumours are the most common malignant form and constitute the second most frequent cause of death from cancer, after lung cancer. It is one of the cancers against which preventive strategies could be most effective, as generally it develops from a previous benign polyp called adenoma, which can be detected and removed prior to

evolution to cancer.

Worldwide, colon cancer is the third most common type of cancer and the second in terms of deaths caused, although the survival rate varies very much from country to country. In the USA the survival rate is 62%, whereas in Europe it is only 43%. One of the reasons for this difference is the implementation of preventive screening programmes designed to help in early diagnosis of important diseases, which is not universally undertaken in Europe, and to which the research carried out within the framework of this project may make a decisive contribution.

Current preventive strategies are not completely effective. Colonoscopy is the most effective, but is invasive and expensive. Although methods of Faecal Occult Blood Testing (FOBT) have a high capacity to detect cancer, they have a low sensitivity for detecting adenomas; therefore, their efficacy in reducing mortality is rather limited.

In this scenario, the identification of biomarkers able to improve the diagnostic precision of the FOBT, and thereby to avoid the high cost and discomfort of a colonoscopy, is a very attractive alternative, especially regarding the possibility of significantly reducing both incidence and mortality.

Dr Antoni Castells, a scientist from the Hospital Clinic of Barcelona, is coordinating the project, in which researchers from the Molecular Biomarkers Group of the University of Vigo and the Gastroenterology Departments of the University Teaching Hospital Complexes of Vigo and Ourense are participating. The other two groups collaborating in the project belong to the University Teaching Hospital of the Canary Islands and the General and University Teaching Hospitals, both in Alicante.

All participants in the research have more than ten years experience working on the identification of new biomarkers for the prevention of

colorectal cancer. The support provided by the AECC, only allocated to the research groups with highest level of scientific excellence, is an important boost for the Galician scientists and their collaborators, because only the most outstanding oncological groups in Spain competed in the call for research proposals. The funding associated with this support was awarded in 2013 and will continue for five years.

Within the overall structure of the project, the Galician group, led by Professor Javier Rodríguez Berrocal, is undertaking a sub-study of protein biomarkers in the serum of healthy individuals. This research will assess the efficacy of certain proteins in the early detection of colon cancer and adenomas. In a first phase, work begun in 2009 will be completed to identify potentially effective markers. In a second phase, the validity of these markers will be confirmed in a group of individuals who participate in screening programmes for this type of cancer.

Provided by Universidade de Vigo