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Study makes progress in zoning in on biomarkers for better colon cancer treatment

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New research has yielded a clearer picture of which biomarkers could help doctors more precisely target the treatment of colon cancer, bringing closer the day when patients who will not benefit from chemotherapy are spared it, while those that will, get the more aggressive treatment they need.

As with many other solid tumours, doctors plan treatment of colon cancer chiefly by staging the tumour, which involves assessing how deep it has infiltrated into the bowel wall and how far the cancer has spread. Generally, if the cancer has spread to the lymph nodes, chemotherapy is given after surgery to prevent recurrence.

“That approach is not very precise,” said the study’s lead investigator, Dr Arnaud Roth, a medical oncologist and chief of Oncosurgery at the University Hospital of Geneva, Switzerland. “Even if the lymph nodes are involved, at least half of those patients won’t ever suffer a relapse and could be spared chemotherapy. However, since there is no good tool to distinguish them from the people who have a high likelihood of relapse, all patients with cancer detected in lymph nodes are treated with chemotherapy.

“New tools are needed to make this distinction and biomarkers are one possibility,” said Roth, who presented a large study on this subject today (Wednesday) at the European Cancer Conference (ECCO 14) in Barcelona.

Since the decoding of the human genome, scientists have increasingly been looking for genes or protein biomarkers consistently over-expressed or under-expressed in cancer tissue to see if those markers can help better determine prognosis and tailor treatment for individual patients.

The study, by a team of European scientists which Roth coordinates, examines in one of the largest patient groups to date a broad panel of candidate biomarkers suspected of playing a role in colon cancer.

“The results are preliminary but extremely encouraging. This study will, we hope, clarify which biomarkers will be clinically useful, which are probably not and which will have the most impact. There have been a lot of studies of limited scope previously, but nothing conclusive,” Roth said.

The researchers examined potentially promising biomarkers in 1,564 samples, preserved as part of a chemotherapy study, of healthy and cancerous colon tissue from patients operated on in more than 368 hospitals in Europe. More than 10 molecular markers were investigated with a high success rate (>90%), demonstrating the method’s feasibility with routinely processed tissue.

“If one of those markers is strongly linked to the reaction to chemotherapy, it might be useful to test in a clinical trial its value in deciding whether to give chemotherapy or not,” Roth said.

“For instance, it’s early in our analysis, but SMAD4 is looking quite good, in that patients with high SMAD4 expression had a significantly better prognosis than those with low expression. It would have to be investigated further, but maybe patients who strongly express the SMAD4 gene don’t need any additional therapy after surgery.

“On the other hand, in this patient population with adjuvant therapy, we found that KRAS, a type of gene called an oncogene that is involved in regulating cell division, has no prognostic value whatsoever – zero. So we think KRAS can be abandoned as a potential prognostic biomarker for colon cancer,” Roth added.

Source: ECCO-the European CanCer Conference