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Biomarkers in relation to response of preoperative radiotherapy in rectal cancer patients- A Swedish rectal cancer clinical trial of preoperative radiotherapy

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The introduction of preoperative radiotherapy (RT) in the treatment of rectal cancer has reduced the frequency of local recurrence and improved patient survival, and RT is now a part of the standard treatment regime in Sweden. However, it is still a major problem that there are unknown factors contributing to variations in recurrence and survival after RT and surgery among rectal cancer patients with the same tumour stage, therefore it is important to search for biological markers that might influence recurrence and survival, and to identify the patients who benefit from RT.

The study included primary tumours from 163 rectal cancer patients who participated in a clinical trial of preoperative RT (87 patients without and 76 with RT before surgery), alone with the corresponding distant and adjuvant normal rectal mucosa, as well as lymph node metastasis.

We have examined p53, WRAP53, p73, survivin, apoptosis, Cox-2, legumain, FXYD-3, MAC30, PRL, ATM, Ki-67, CD163, PPARδ and PINCH, by PCR using confronting two-pair primers and electrophoresis, immunohistochemistry, Western blot and TUNEL.

Expression of WRAP53, p73, Cox-2, legumain, FXYD-3, MAC30, PRL, ATM, PPARδ increased from either distant or adjacent normal mucosa to primary tumour. In the RT group, overexpression of p53, WRAP53, p73, Cox-2, legumain, FXYD-3 and PRL was related to less tumour necrosis or apoptosis, increased incidence of local or distant metastasis, and an unfavourable prognosis independent of both the tumour stage and differentiation. However, none of these effects was seen in the non-RT group. In further interaction analyses, the correlations with prognostic significance of these factors were different between the patients with RT and the patients without RT.

In conclusion, certain biomarkers were independent prognostic factors in patients receiving preoperative RT for rectal cancer, which might provide additional information for selecting patients for preoperative RT.

Biography

Xiao-Feng Sun is professor at Department of Oncology, Institute of Clinical and Experimental Medicine, University of Linköping, Sweden.

Xiao-Feng Sun started medical education in 1977 and obtained MD in 1982 and Msc in 1988 in China. She moved to Sweden in 1989 and obtained PhD in 1993 at Linköping University, Sweden, and did her postdoctor training at Lund University, Sweden, and became professor at Onoclogy in 2005 at Linköping University, Sweden.

Her work focuses on study of genetic alterations in colorectal cancer patients and cell lines, in order to find biomarkers for identifying high-risk individuals, selecting patients who will benefit from chemo/radiotherapy, and evaluate patient prognosis, as well as the mechanisms of biomarker effects.

She has published 132 original full-length publications and three review papers in various international journals, such as Lancet, JNCI, J Clin Oncol, Clin Cancer Res, and Oncogene, and two book chapters.

Dr. Sun has received numerous international, national and local grants/award:

Dr. Sun serve as editorial board member in six international journals, and as reviewers for more than 30 international journals.

Dr. Sun is a member of numerous professional organizations, including Association of International Union Against Cancer Fellows (UICC), American Association for Cancer Research (AACR), European Association for Cancer Research (EACR), Gastrointestinal Society of Oncology, Swedish Society of Medicine, Swedish Society of Oncology, Swedish Cancer Society, and Swedish Proteomics Society.