Contribution ID: **133** Type: **oral (20 minutes)**

Association between XRCC1 polymorphisms and acute side effects induced by radiotherapy in breast cancer patients

Thursday 18 October 2012 18:35 (20 minutes)

Clarice Patrono1, Laura Verna2, Silvia Sterpone3, Valentina Palma1, Renata Cozzi3, Antonella Testa1
1ENEA Casaccia, Rome, Italy; 2S. Pietro Hospital, Radiotherapy Unit, Rome Italy; 3Department of Biology, "Roma Tre"University, Rome, Italy

Therapeutic exposure to ionizing radiation can induce normal tissue side effects which consistently differ among individuals suggesting a possible genetic control. Single Nucleotide Polymorphisms (SNPs) in genes involved in DNA repair affecting protein function, could modulate DNA repair capacity and influence the individual radiosensitivity.
The aim of the present prospective study was to evaluate the association of polymorphisms in XRCC1, a gene involved in base excision and single-strand breaks repair, with the risk of radiotherapy-induced acute side effects in BC patients. We genotyped for XRCC1 -77 T>C, Arg194Trp, Arg399Gln variant alleles a cohort of 78 Italian BC patients, receiving a standard radiotherapy regimen after breast-conserving surgery. The severity of acute skin adverse reactions was assessed according to Radiation Morbidity Scoring Scheme (EORT/RTOG). We found that the development of acute side effects (grade > 2) was significantly lower ($p<0.05$) in BC patients bearing XRCC1 399 variant allele.
We also evaluated the association of XRCC1 variants and BC susceptibility, comparing the genotype distribution of patients to matched healthy subjects. We found a significant association between BC occurrence and XRCC1 -77 T>C and Arg399Gln variant alleles; a significant decreased risk of developing BC was found associated with XRCC1 haplotype H4, containing the three wild type alleles.
Our results suggest that XRCC1 Arg399Gln SNP could be protective against early severe side reactions after radiotherapy in BC patients. Moreover, XRCC1 SNPs may be implicated in the occurrence of BC as previously reported.

Author: Dr PATRONO, Clarice (ENEA C.R. CASACCIA, Rome, Italy)

Co-authors: Dr TESTA, Antonella (ENEA C.R. CASACCIA, Rome, Italy); Dr VERNA, Laura (S. Pietro Hospital, Radiotherapy Unit, Rome, Italy); Prof. COZZI, Renata (Department of Biology, "Roma Tre"University, Rome, Italy); Dr STERPONE, Silvia (Department of Biology, "Roma Tre"University, Rome, Italy); Ms PALMA, Valentina (ENEA C.R. CASACCIA, Rome, Italy)

Presenter: Dr PATRONO, Clarice (ENEA C.R. CASACCIA, Rome, Italy)

Session Classification: Modulation of Radiosensitivity

Track Classification: Modulation of Radiosensitivity