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DNA damage as early anticancer barrier in testicular tumorigenesis

Francesco Merolla, Gennaro Ilardi, Maria Siano, Silvia Varricchio, Maria Luisa Vecchione, Massimo Mascolo, Gaetano De Rosa, Angela Celetti, Stefania Staibano.

University of Naples "Federico II", Italy

Abstract

CCDC6 is a substrate of the kinase ataxia teleangectasia mutated (ATM), which allows a proper DNA damage checkpoint in response to genotoxic stress. CCDC6 is found rearranged upon fusion with different partners in several human cancer types.

To date, testicular germ cell tumors (TGCTs) have been reported to lack the DDR pathway activation. For this reason, we analyzed CCDC6 expression on serial section of mouse testis by immunohistochemistry and on separate population of murine testicular cells by western blot. In addition, we evaluated CCDC6-proficient and CCDC6-deficient GCI germ cells for the resistance to DNA damage-induced apoptosis and the production of reactive oxygen species, and normal human germ cells, a series of male cell tumors and the human seminoma TCam2 cell line for the expression of CCDC6, with immunohistochemistry and western blot.

We found that CCDC6 loss was the most consistent feature among the primary tumors and TCam2 cells. Moreover, CCDC6 silencing in GCI cells caused resistance to oxidative DNA damage. These results indicate that the loss of CCDC6 in germ cell tumors may be considered as a limiting event in tumor formation.

Biography

Francesco Merolla has graduated at University of Naples, School of Medicine, in 2002 and completed his Ph.D. at the age of 29 years; he completed his postdoctoral studies from Clare Hall Laboratories of Cancer Research UK. He is resident in pathology at the pathology unit of school of medicine, University of Naples "Federico II", a premier academic institution and a reference hospital. He has published papers in reputed journals.