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New targeted therapies for the treatment of thyroid cancer

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Abstract

The incidence of thyroid cancer is rising faster than many other cancers, with the highest overall rate of increase in cancer deaths and it is associated with a higher number of advanced diseases characterized by the loss of cancer differentiation and metastatic spread. The development of new therapeutic drugs able to blockade the oncogenic kinases (BRAF V600E, RET/PTC) or signaling kinases [vascular endothelial growth factor receptor (VEGFR), platelet-derived growth factor receptors (PDGFR)] involved in cellular growth and proliferation is now possible thanks to the knowledge of the molecular pathways involved in the pathogenesis of thyroid cancer. Some clinical trials have been conducted showing the ability of targeted therapies (sorafenib, sunitinib, axitinib, imanitib, vandetanib, pazopanib, gefitinib, cabozantinib) in stabilizing the course of the disease. Until now, no consensus guidelines have been established for patient selection. Thereby the effects on survival are unclear, because of lack of complete responses and because of the discrepancies between the radiographic tumor responses and the effective improvement of survival. To reach the goal to extend life duration assuring a good quality of life, we need to have more data on toxicities of single agent and of combination of different drugs, in order to identify specific biomarkers able to predict the treatment efficacy, the clinical outcome and to guarantee a tailored dosage of the drugs. Moreover, the possibility to test *in vitro* (in thyroid cancer cells in primary cultures) these novel drugs may help to improve the personalization of the treatment.

***Keywords*:** thyroid cancer, targeted molecular therapies, tyrosine kinase inhibitors, aurora kinase inhibitors, peroxisome proliferator-activated receptor-γ, RET, BRAF, VEGFR.

Biography

Alessandro Antonelli (MD) has completed the Specialization in Endocrinology in 1985 and the Specialization in Oncology in 1992, at the University of Pisa, Pisa, Italy. He is now Researcher in the Department of Clinical and Experimental Medicine at the University of Pisa. His researches have been published in more than 200 articles on International journals (Impact Factor > 650). He serves as an editorial board member of repute and he is Referee and Reviewer of many scientific International journals.