

Functional Tests: The Future of True Personalized Medicine in Oncology

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Short Commentary

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INTRODUCTION

Since a couple of years, personalized medicine has become fashionable. Numerous research works have developed new approaches aiming at individualizing treatment for cancers. The expansion of targeted therapies like tyrosine kinase receptors inhibitors (TKI) ^[1-4] or monoclonal antibodies ^[5-7] are all evidence of such trend. Moreover, and despite constant progresses in tumour genotyping ^[8,9] (which makes precision medicine accessible only to very few patients), two individuals developing the same cancer still receive the same therapeutics in the majority of case! For more than 10 years and in several countries, an alternative approach has already proved worthwhile.

It is based on the concept that each tumor is unique ^[10-14]. From this postulate emerges the evidence that two patients with the same diagnosis do not necessarily have to be treated in the same way ^[15]. Thus, the development of ITRT (Individualized Tumor Response Testing), also called "functional tests", addresses this issue ^[15-19]. In United States, Japan or France, many researchers develop and promote reliable tests to determine what will be the more efficient therapeutic(s) to destroy « THE tumor of ONE patient ». In December 2015, eminent journal Nature Reviews Cancer published: « Precision medicine for cancer with next-generation functional diagnostics » ^[20]. This article highlights the fact that precision medicine can increase up to 70% the efficiency of first therapeutic line, and can even double the progression-free survival of patients. These major advances, associated with targeted therapies, are bringing us into the personalized medicine of tomorrow.

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