

Cancer Chemotherapy and Cancer Personalized Medicine: An Old Car with a New Engine

Mingshan Yan*

The University of Texas, USA

Cancer chemotherapy dates back to World War I when the chemical warfare mustard gas was proved to be a potent toxin that suppresses rapidly growing white blood cells. It was reasoned that the agent might have a similar effect on rapidly growing cancer cells. In 1942, the first cancer chemotherapeutic drug nitrogen mustard was applied to patients with advanced lymphomas. After then, many other cancer chemotherapeutic drugs have been developed. As the third cancer treatment regimens followed surgery and radiation, chemotherapy has benefited tens of billions of cancer patients.

Today, cancer chemotherapy become unusually brilliant not only because of its principles being improved with time but largely because of a novel anticancer approach, cancer targeted therapy, making a conspicuous figure in the field of fighting cancer. The major shift, we can see, is from non-specific and toxic killing to genetically specific suppressing toward cancer. The main body of this category is small molecule drugs, some of which have been approved for treatment of different cancers. For example, imatinib is used for chronic myelogenous leukemia by targeting Breakpoint Cluster Region-abelson (BCR-ABL), gefitinib and erlotinib for non-small cell lung cancer by targeting mutant Epidermal Growth Factor Receptor (EGFR), and vemurafenib for melanoma by targeting mutant B-type Raf kinase

(BRAF). All of these drugs have been shown to yield high response rates. In most cases, targeted therapy is given along with similar agents or with conventional chemotherapeutic drugs in order to reduce drug resistance of cancer cells and get more effective results. In this sense, therefore, cancer targeted therapy is the extension and development of chemotherapy.

Currently tens of thousands of new small molecule drugs are in development directed against a variety of molecules and mutants in different signaling pathways. Oncologists and researchers have to find ways to identify and use the genetic information of individual patient to match the biological driver of the drug. Thus, the concept of personalized medicine, introduced more than a decade ago, has quietly stepped in the field of cancer treatment. Massachusetts General Hospital and MD Anderson Cancer Center are preparing to screen all the genetic mutations related to cancer for every patient so as to decide which treatments might be suitable to them. Concurrently, to meet the need of the market, the costs of gene analysis timely plummet with fast development of second generation of DNA sequencing techniques. Optimistically, cancer personalized medicine will be closer to being realized as a lighthouse to help guide cancer therapies.

*Corresponding author: Mingshan Yan, Assistant Professor, The University of Texas, USA, E-mail: yanmingshan@hotmail.com

Received July 12, 2012; Accepted July 14, 2012; Published July 16, 2012

Citation: Yan M (2012) Cancer Chemotherapy and Cancer Personalized Medicine: An Old Car with a New Engine. Chemotherapy 1:e114. doi:10.4172/2167-7700.1000e114

Copyright: © 2012 Yan M. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.