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Targeted Therapies in Cancer

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Editorial

Targeted therapy is a type of treatment that targets a cancer's specific genes, proteins or the tissue environment that contributes to cancer growth and survival. A primary goal of targeted therapies is to fight cancer cells with more precision and potentially fewer side effects. A number of targeted therapies are being used to treat cancer and many more are being tested in clinical trials. Targeted cancer agents are broadly classified as either monoclonal antibodies or small molecules. Therapeutic monoclonal antibodies target specific antigens found on the cell surface, such as trans-membrane receptors or extracellular growth factors. These monoclonal antibodies are conjugated to radioisotopes or toxins to allow specific delivery of these cytotoxic agents to the intended cancer cell target whereas small molecules can penetrate the cell membrane to interact with target inside a cell. These small molecules are usually designed to interfere with the enzymatic activity of the target protein. There is also a class of targeted therapy drugs called angiogenesis inhibitors that target for stopping angiogenesis that surrounds a tumor tissue. As with any drug, targeted cancer therapies typically have several different names. As -mab for monoclonal antibody and -ib for small molecules with inhibitory properties is used as suffix generally. Like bevacizumab is a humanized monoclonal antibody with a circulatory system target (VEGF-A) and Imatinib is a small molecule tyrosine kinase inhibitor. There are also various other types of targeted therapies like hormonal, signal transduction inhibitors, apoptosis inducers, angiogenesis inhibitors, gene expression modulators and immunotherapies. But limitation for use of targeted therapy is the cost of these agents which can exceed several thousand dollars per months, may become an important issue in health care economics and sometime these therapies may not be effective in the absence of such target. This distinction may be influenced by patient ethnicity and sex, as well as by tumor histology. Targeted therapies and cytotoxic agents also modulate immune response, which raises the possibility that these treatment strategies might be effectively combined with immunotherapy to improve clinical outcomes. Therefore, an understanding of these potential drug interactions associated with targeted cancer therapies is important as it can play significant role in the field of advance oncology research and treatment.