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Abstract

Melanoma is the most common and severe form of skin cancer, known for its rapid progression and high potential for metastasis. Over the past decade, melanoma cases have increased by more than 40%, making it a significant public health concern. There are several proven methods to reduce tumors. Chemotherapy, a commonly used treatment, employs drugs to kill cancerous cells and prevent their spread. While effective, chemotherapy can have significant side effects and limitations. Recent advances in immunotherapy, particularly the development of checkpoint inhibitors, show promise in harnessing the immune system to combat cancer cells under various conditions. Checkpoint inhibitors work by blocking proteins that prevent the immune system from attacking cancer cells, thereby enhancing the body's natural immune response against the tumor. In doing this, T cells are allowed to kill the cancer cells. This review will highlight the current state of checkpoint inhibitors, exploring their mechanisms and interactions with biomarkers. Biomarkers help predict which patients are most likely to benefit from this therapy, optimizing treatment outcomes. As checkpoint inhibitors are a relatively new treatment, it is important to address other issues that could be limiting this treatment such as cost, accessibility, and long-term effectiveness. Understanding these factors helps to integrate checkpoint inhibitors into standard melanoma treatment protocols and improves patient care.