Preparing for a New Frontier

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The current pillars of cancer treatment incorporate radiation, surgery, and chemotherapy, with the goal of targeting the tumor and inducing complete or partial responses. Immuno-oncology (I-O) is a rapidly developing area of science and treatment that focuses on harnessing the ability of the patient's own immune system to fight cancer. While great strides have been made in the fight against cancer, improved survival remains a challenge for some advanced malignancies. Yet, malignant melanoma, renal cancer, and prostate cancer are potentially immunogenic, which makes them good candidates for immunotherapeutic approaches. Currently, more than 900 I-O clinical trials are in various phases of development.

The history of immunotherapy dates all the way back to 1796 when Edward Jenner used cowpox to induce immunity to smallpox. The first cellular immunotherapy (sipuleucel-T) was approved for prostate cancer in 2010. Ipilimumab (anti-CTLA-4) was approved for advanced melanoma in 2011. This year saw the first programmed cell death protein 1 (PD-1) monoclonal antibody inhibitors (nivolumab and pembrolizumab) approved.

These two new PD-1 inhibitors are currently indicated for the treatment of advanced melanoma (nivolumab, pembrolizumab) and squamous non-small cell lung cancer (nivolumab). These agents also have activity in a variety of other disease states and are currently being evaluated in numerous clinical trials. In addition to the development of anti-PD-1 agents, therapies are being developed that target the PD-1 receptor and its ligands (PD-L1/2). I-O therapies have the potential to be used as monotherapy or as a part of combination regimens. Combinations of complementary I-O therapies with chemotherapy, radiotherapy, and targeted therapy have the potential to enhance anti-tumor effects. One can imagine the complexities of incorporating these new agents into the treatment of various diseases as more agents are developed and approved for use.

The anti-PD-1/PD-L1 agents are relatively well tolerated. However, there are many drug-related adverse events with potential immune-related causes, such as pneumonitis, vitiligo, colitis, hepatitis, hypophysitis, and thyroiditis. Because most tumor-associated antigens are also expressed in normal cells, the potential exists for toxicity against healthy tissues. Adverse events can be serious and potentially lethal, demanding vigilance throughout and after treatment. When combined with other forms of cancer treatment, I-O therapies can lead to numerous toxicities that must be identified early and managed appropriately. Another caveat with I-O is the monitoring of response with these new agents. Therapies that affect the immune system may not induce a measurable effect on tumor growth immediately. After initiating I-O therapy, immune activation and T-cell proliferation can start within days to weeks, but measurable antitumor effects may not be realized until weeks to months after initial treatment; the potential effects on survival may not be seen until several months after initial administration.

This new frontier of medicine requires specialized education so that we can understand the immune system, its relationship to different tumor types, how these new agents interact with the immune system, and how to identify and manage immune-related events. To meet this critical need, ACCC formed the Institute for Clinical Immuno-Oncology (ICLIO), which launched in June 2015. ICLIO translates the latest I-O scientific research and findings for the multidisciplinary cancer care team, making the information accessible and—most importantly—breaking it into digestible action items that can be easily implemented in the community setting. ICLIO has brought the new frontier of immuno-oncology to your door. The next step is up to you. Visit accc-iclio.org today for information about clinical optimization, coverage and reimbursement, management best practices, patient access and advocacy, and training and development. OI

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