Cancer Immunotherapy and Other Advanced Therapies

Highlights:

- Immunotherapy has the potential to revolutionize treatment for cancer and other diseases.
- These trials present unique challenges in patient screening and safety, logistics, and more.
- The regulatory evaluation process for immunotherapy drugs and advanced therapies is usually longer and more complex.

Introduction

The immunotherapy field holds great promise. Currently, as an example, these therapies represent a "breakthrough" in cancer treatment as they have the potential to revolutionize the way we treat many forms of cancer, as well as other diseases and disorders.

As an example of the development of such advanced therapies, immunotherapy treatments for oncology – or immune-oncology treatments – can be delivered using a variety of techniques and classes of agents. These include:

- Monoclonal antibodies (mAbs) mediating cell cytotoxicity on tumor cells, or acting on receptors involved in the modulation of the innate immune reaction. Also, bispecific antibodies and recombinant protein mediating an immune reaction
- Small molecules acting as check point inhibitors, or with an intrinsic immunomodulatory effect
- Gene therapy promoting a specific immune reaction against tumor antigens and delivered through multiple classes of vectors, including recombinant plasmid DNA, recombinant virus, or cell therapy
- Vaccines with peptides, vaccines with autologous or allogenic activated dendritic cells
- Cell therapy with tumor infiltrated lymphocyte and T-cells with chimeric antigen receptors (CAR T-cells).

These technologies, developed for cancer immunotherapy, have now found application in other disease areas in indications such as cardiac disorder, inflammatory disease, genetic disorders, diabetes mellitus, and regenerative treatment. As a consequence, the number of companies investing in these new therapies has markedly increased in

the past few years. The size of the market is expected to grow exponentially; in fact, the cancer immunotherapy market alone is expected to surpass $24 billion by 2020 according to analyst reports.

In this very specialized, and increasingly competitive area of drug development, biopharmaceutical companies developing these innovative therapies gain a distinct advantage working with a contract research organization (CRO) like Synteract that understands and has direct experience with the unique challenges and special considerations of drug trials in the immunotherapy field. Synteract has managed Phase I-III trials across all areas of immunotherapy, with longstanding expertise navigating the complex development path for these advanced treatments.

Immunotherapy Trials Present Common Core Challenges

Patient Screening and Safety Considerations

Multiple factors must be considered when managing immunotherapy trials. Safety, in particular, is an essential consideration of any new therapy. In many cases the treatments are customized for each individual and need to be prepared and processed separately for each patient. For example, treatment with autologous cell therapy usually requires a long preparation and activation period before the initiation of the treatment. Patient screening is lengthy and involves a number of steps and procedures with a potential risk of failure. In some cases, a patient could be eligible but the researcher could fail in the collection of immune cells, or in the development of the custom treatment. Concerns for the patients must inform all steps of the process, starting at the very beginning.

Logistics

The ability to select, manage and integrate work with experienced labs, investigators, sites and vendors cannot be underestimated. With advanced therapies using genetically modified organisms, viruses and other biologic agents, the storage, preparation, administration and destruction of the investigational product on site might require special equipment, restricted areas and experience in the particular indication or therapy being used. Tailored treatments and cellular therapies usually involve multiple shipments and complex handling procedures to maintain the cryo-protection of the agent.

In addition, shipping and security procedures may be stringent. These drugs are more expensive than cocaine, as one researcher has said, and the risk of theft or tampering is real, so efficient tracking is a necessity.

End Points

The evaluation criteria in immune therapy are usually different than those used in other standard treatments. In oncology, the activation of the innate immune system can generate pseudo progression at the initiation of treatment. Other artifacts, including a delayed response following the activation of the adaptive immune response, also interfere with the assessment of the tumor when classical evaluation criteria are used. Modified evaluation criteria should be included in the protocols of immunologic treatment to overcome this issue.

Regulatory Process

The regulatory evaluation process for immunotherapy drugs and more generally of advanced therapies is usually longer and more complex. When using genetically modified organisms, the sponsor will have to supply additional information on the risks of dissemination and accidental exposure. An evaluation of the product and the protocol by a biosafety committee is generally required, in addition to the normal evaluation process. Both gene and cell therapy protocols have longer evaluation timelines and generally lead to questions from the competent authorities. Regulatory specialists are required. If these are not on the sponsor's staff, then they must be outsourced and it is best to work with regulatory personnel with immunotherapy and other advanced therapy experience. The regulatory timelines are typically extended, and for certain immunotherapies the regulatory bodies may not have any established timeline at all.

Synteract works from the outset to establish a regulatory strategy that will move the process along as quickly as possible. Our cumulative experience in navigating the core challenges of immunotherapy trials and finding the appropriate solutions helps sponsors avoid the pitfalls and delays that can occur.

About Synteract

With employees across 21 countries, Synteract is an innovative, full-service CRO supporting biopharma companies across all phases of drug development to help bring new medicines to market. Synteract has conducted 4,000 studies on six continents and in more than 60 countries, working with more than 26,000 investigative sites and 750,000 patients. It has contributed to more than 240 product approvals. Synteract offers a notable depth of therapeutic expertise in oncology, dermatology, and neuro degenerative indications, as well as rare and orphan, pediatric, and immunotherapy studies.

For more information on how we can support your clinical trial, please visit www.synteract.com/Therapeutic-Expertise/Oncology or ContactUs@synteract.com.