An overview of gene therapy for cancer.

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Abstract

Since the advent of gene therapy as a cure for disease, there have been many twists and turns. However, the gene therapy journey has reached a fundamental milestone, as evidenced by the increasing number of gene therapy products on the market. Gene therapy has a promising future, given the currently approved and unapproved products and the large number of clinical trials in this field. The changing trends in gene therapy strategies, vectors, and targets can be informative for pharmaceutical companies, policy makers, and researchers.

Keywords: Clinical trials, Gene therapy, Genetic diseases.

Introduction

Since the cloning of the human genome in the application of gene therapy to cancer has only recently been realized. This has evolved from advances in our understanding of genetic mutations in patient cancer cells and faster diagnostic testing capabilities that enable the detection of the genetic status of individual tumours. Additionally, advances in cancer immunology have spawned several new drugs, including checkpoint inhibitors, vaccines, oncolytic viruses and CAR-T cells [1].

Recent advances in cell and gene therapy have enabled the treatment of a wide range of diseases, from congenital diseases to solid tumours. Many efforts have been made since the first gene therapy in and several gene therapy products have been approved in recent years, ushering in a new era of gene therapy. Several milestones in the gene therapy research trajectory have paved the way for translating science into products from bench to bedside provide valuable information for improved study design, and realistic policy design for gene therapy research centers [2].

The purpose of this review was to provide an overview of gene therapy clinical trials and analyze current trends with a focus on gene therapy strategies. This study reviewed clinical trial information from Clinical trials. A flow chart for the inclusion of clinical studies that extracted data from the remaining studies that screened duplicate search results by title is shown in figure. Data extracted for final analysis should include publication information type of vector used, type of cell or target tissue manipulated, type of cell or target tissue introduced, genes, *ex vivo* or *in vivo* gene therapy modalities, clinical trial stages, disease groups followed by subcategories, and specific diseases for which gene therapy is used. It should be noted that if any of the evaluated variables were indeterminate or unattainable, they were excluded from the analysis. After extracting study status, clinical studies that were discontinued, interrupted, or were excluded [3].

Surgeons are increasingly being asked to obtain tissue for diagnostic, therapeutic, and biomarker purposes in patients undergoing gene therapy. Early preoperative consultation with a pathologist and medical oncologist is important to ensure proper tumours specimen selection, surgical procedures, tissue handling, and specimen processing. Surgeons may also be asked to provide access to tissue to perform gene therapy using open, laparoscopic, and endoscopic approaches. The cistron medical care journey began once Wilhelm Johansen coined the term "gene". Crick and James Watson discovered the helix structure of deoxyribonucleic acid regarding a century later. The term "genetic engineering" was 1st employed in the Nineteen Thirties. the fundamental principle of cistron transfer in microorganism was discovered in his Nineteen Sixties and afterward tailored for the event of eukaryotic transfection techniques represented within the Seventies, restriction and ligature enzymes kind the premise of biotechnology recombinant deoxyribonucleic acid technology has enabled researchers to introduce therapeutic genes of selection into built vectors. With the invention of the power of viruses to transfer genetic material, infectious agent vectors have emerged as promising and effective tools for cistron transfer. These technological advances have allowed scientists to form cistron medical care vectors which will deliver specific genetic material to targeted class cells [4].

Typically, therapeutic factor medical care transfers genetic material into cells to reverse abnormal conditions or induce new traits. completely different ways like addition, piece of writing and deletion knockout is used, betting on the underlying genetic drawback factor medical care is typically accustomed add traditional, useful copies of alleles to extend organic phenomenon. Add a standard human plasma protein

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IX gene to supply sufficient Christmas factor in blood disorder type B. Factor medical care is typically accustomed introduce altered alleles into cells to administer them new traits, automotive structure in CAR-T cells or suicide genes such as deoxythymidine kinase in cancer cells. Some factor therapies ar used for vaccination, chiefly by introducing specific antigens to stimulate the system. This strategy has gained explicit attention within the development of COVID-19 vaccines. Factor medical care could also be accustomed repair or edit mutated defective allele. Correction of Survival Nerve cell two (SMN2) factor transcription by antisense oligonucleotides in spinal muscular atrophy could be a valuable tool during this mechanism. Inactivating abnormal or defective genes, like victimization siRNA (antisense oligonucleotides) or CRISPR to degrade TTR template RNA and scale back TTR macromolecule production in the treatment [5].

Conclusion

Gene therapy is making inroads into various fields. Starting with genetic diseases, gene therapy now plays a pioneering role in many other fields. After reviewing gene therapy clinical trials from to it was concluded that they could be grouped into three main areas: cancer, monogenic and polygenic diseases genetic sexually transmitted diseases, infectious diseases and other research.

References

1. Miller AR, Economou JS. Cytokine-mediated gene therapy for cancer. Ann Surg Oncol. 1994;1(5):436-50.
2. El-Aneed A. An overview of current delivery systems in cancer gene therapy. JCR 2004;94(1):1-4.
3. Seth P. Vector-mediated cancer gene therapy: an overview. Cancer Biol Ther. 2005 ;4(5):512-7.
4. Pahle J, Walther W. Vectors and strategies for nonviral cancer gene therapy. Expert Opin Biol Ther. 2016;16(4):443-61.
5. Ramamoorth M, Narvekar A. Non viral vectors in gene therapy-an overview. JCDR. 2015;9(1):GE01.

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