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Review

Design of clinical trials for therapeutic cancer vaccines development

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ABSTRACT

Advances in molecular and cellular biology as well as biotechnology led to definition of a group of drugs referred to as medicinal products of advanced technologies. It includes gene therapy products, somatic cell therapeutics and tissue engineering. Therapeutic cancer vaccines including whole cell tumor cells vaccines or gene modified whole cells belong to somatic therapeutics and/or gene therapy products category. The drug development is a multistep complex process. It comprises of two phases: preclinical and clinical. Guidelines on preclinical testing of cell based immunotherapy medicinal products have been defined by regulatory agencies and are available. However, clinical testing of therapeutic cancer vaccines is still under debate. It presents a serious problem since recently clinical efficacy of the number of cancer vaccines has been demonstrated that focused a lot of public attention. In general clinical testing in the current form is very expensive, time consuming and poorly designed what may lead to overlooking of products clinically beneficial for patients. Accordingly regulatory authorities and researches including Cancer Vaccine Clinical Trial Working Group proposed three regulatory solutions to facilitate clinical development of cancer vaccines: cost-recovery program, conditional marketing authorization, and a new development paradigm. Paradigm includes a model in which cancer vaccines are investigated in two types of clinical trials: proof-of-principle and efficacy. The proof-of-principle trial objectives are: safety; dose selection and schedule of vaccination; and demonstration of proof-of-principle. Efficacy trials are randomized clinical trials with objectives of demonstrating clinical benefit either directly or through a surrogate. The clinical end points are still under debate.

Contents

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