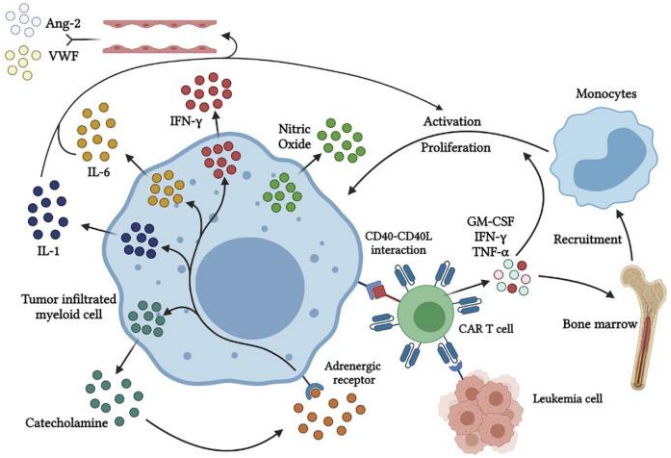
The immunologic aspects of cytokine release syndrome and graft versus host disease following CAR T cell therapy

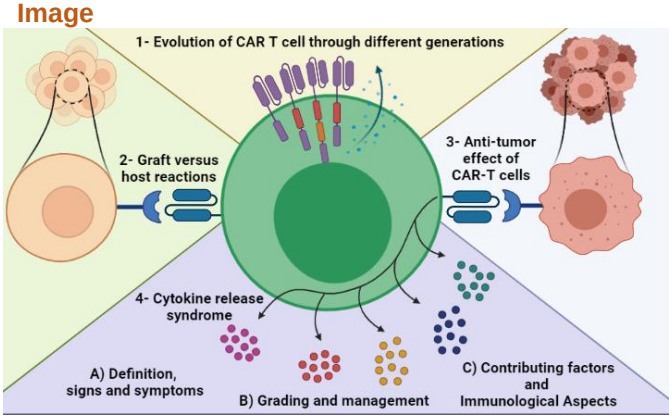
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Abstract (300 word limit)

Chimeric antigen receptor (CAR) T cells are the pioneers of cancer immunotherapy, which to this date have several FDA-approved products. They have been substantially improved since their first introduction in 1993 and have showen promising results regardless of their inevitable side effects. Cytokine release syndrome (CRS), the most common toxicity after CAR T cell treatment, is affiliated to a systemic inflammation through surge of cytokines, mainly IL-6, IL-1, and INF-γ. Furthermore, difference between histocompatibility antigens activates the graft versus host disease (GvHD) effect of the allogenic CAR T cells against the host cells. Immunological reactions induced by CAR T cells in the form of CRS or GvHD is necessary for fostering good responses, while excess reactions can potentially threaten patient life. In this review, we first describe the history, applications, and structure of CAR T cells, followed by a comprehensive review of CRS regarding its definition, management, and immunological aspects. Finally, we discuss about the clinical aspects of CRS and GvHD after CAR T cell therapy and how to harness anti-tumoral effects, while mitigating the adverse effects.



Image



Recent Publications (minimum 5)

1. Mansouri, Vahid, et al. "Recent advances in regenerative medicine strategies for cancer treatment." Biomedicine & Pharmacotherapy 141 (2021): 111875.
2. Arabi, Fatemeh, Vahid Mansouri, and Naser Ahmadbeigi. "Gene therapy clinical trials, where do we go? An overview." Biomedicine & Pharmacotherapy 153 (2022): 113324.
3. Sotoudeh, Masoud, et al. "Interpatient variability in mesothelin expression necessitates its evaluation before gastric cancer immunotherapy." Immunotherapy 14.7 (2022): 531-538.
4. Toutounchian, Samaneh, Naser Ahmadbeigi, and Vahid Mansouri. "Retinal and Choroidal Neovascularization Antivascular Endothelial Growth Factor Treatments: The Role of Gene Therapy." Journal of Ocular Pharmacology and Therapeutics (2022).
5. Mansouri V. X-Linked Retinitis Pigmentosa Gene Therapy: Preclinical Aspects [published online ahead of print, 2022 Nov 8]. Ophthalmol Ther. 2022;1-28. doi:10.1007/s40123-022-00602-y

Photograph



Biography (150 word limit)

Dr Mansouri, MD, has a background in immunology and interest in gene therapy and genetic interventions. As a result, engineered cell therapy and especially Chimeric antigen receptors (CAR) T cells is his field of interest in recent years. The double-sided effect of GVHD and GVT was among the emerging subjects that he has worked on. He is currently a post-doctoral researcher in gene therapy research center working on cell and gene therapy projects.

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Notes/Comments: