Abstract / Povzetek predavanja

Vaccine in the Adjuvant Treatment of Pancreatic Adenocarcinoma

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Pancreatic ductal adenocarcinoma (PDAC) remains one of the deadliest malignancies with a 5-year survival rate below 12%. Even after curative-intent surgery, recurrence is observed in ~90% of cases within the first year. Traditional systemic therapies, including chemotherapy and immune checkpoint inhibitors (ICI), have limited efficacy in PDAC due to the tumor's low immunogenicity and sparse T-cell infiltration.

To explore the role and preliminary outcomes of personalized mRNA-based vaccination (cevumeran) targeting neoantigens in the adjuvant setting for PDAC, and its potential to elicit effective antitumor immunity.

A Phase I trial enrolled 19 PDAC patients post-resection. Each received adjuvant treatment including mFOLFIRINOX chemotherapy, atezolizumab (anti–PD-L1 ICI), and an individualized RNA-lipoplex vaccine (cevumeran). The vaccine encoded up to 20 personalized neoantigens per patient, identified through next-generation sequencing and bioinformatic prediction.

The vaccine was well tolerated; the only Grade 3 adverse event was one case of febrile syndrome. Among the 16 evaluable patients, 50% exhibited vaccine-induced T-cell responses, confirmed by IFN-γ ELISPOT assays and clonal T-cell expansion. These responders showed significantly prolonged recurrence-free survival (RFS not reached vs. 13.7 months in non-responders, HR = 0.08, p = 0.007). Booster doses following chemotherapy further amplified neoantigen-specific CD8+ T-cell clones without overlap with atezolizumab-elicited responses.

Cevumeran demonstrated safety, immunogenicity, and potential clinical benefit as part of a combined adjuvant strategy for PDAC. These promising results justify further investigation in the upcoming global Phase II randomized IMCODE 003 (BNT122) trial. Personalized vaccines could represent a paradigm shift in treating PDAC by overcoming its immunoresistance.

References

1. Siegel RL, *et al. Cancer statistics, 2023*. CA Cancer J Clin. 2023;73(1):17-48.
2. Rojas LA, *et al. Personalized RNA neoantigen vaccines stimulate T cells in pancreatic cancer*. Nature. 2023;618(7963):144-150.
3. Balachandran VP, *et al. Phase I trial of autogene cevumeran for PDAC*. J Clin Oncol. 2022;40(16_suppl):2516.
4. Conroy T, *et al. FOLFIRINOX or gemcitabine as adjuvant therapy for pancreatic cancer*. N Engl J Med. 2018;379(25):2395-2406.
5. Huang X, *et al. Personalized pancreatic cancer therapy: mRNA vaccines*. Mil Med Res. 2022;9:44.
6. Gu Y, *et al. mRNA vaccines in disease prevention and treatment*. MedComm. 2023;4:e167.