ABSTRACT FORM

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ABSTRACT TITLE:
Neoadjuvant Personalized Viral Vectored vaccines are highly effective against tumor relapse in checkpoint inhibitor resistant murine models

ABSTRACT TEXT (max 2500 characters – including spaces)

Background

Personalized vaccines targeting tumor neoantigens are a promising approach in cancer immunotherapy. The optimal time for vaccine efficacy is at the early stages of the disease when a robust anti-tumor immune response can be induced. Checkpoint inhibitors (CPIs) have shown significant benefits in the adjuvant setting, following tumor resection. More recently, Neoadjuvant application of CPI, administered before tumor removal, has proven more effective than adjuvant treatments. Neoadjuvant immunotherapy allows immune priming while the primary tumor is still present, promoting a stronger immune response to prevent tumor relapse. In this scenario, neoantigen-based vaccines can also be employed in both adjuvant and Neoadjuvant contexts.

Methods

This study evaluated the use of a multiepitope vaccine targeting tumor neoantigens derived from the B16F10 tumor model in either adjuvant or Neoadjuvant settings. The vaccine was tested both as a monotherapy and in combination with anti-PD1 checkpoint inhibitors. The efficacy of the vaccine was assessed by measuring tumor recurrence rates post-surgery and immune responses, particularly focusing on the role of $CD8^+$ T cells.

Results

While, adjuvant vaccination alone was not effective in preventing tumor relapse and required combination with anti-PD1 for successful outcomes. Neoadjuvant neoantigen vaccination as a monotherapy provided approximately 90% protection against tumor recurrence following surgery, demonstrating high efficacy. The anti-tumor effect of Neoadjuvant vaccination was critically dependent on $CD8^+$ T cells, as depletion of these cells resulted in relapse rates similar to untreated controls. Strong induction of neoantigen-specific T cells was observed, which persisted even after surgery.

Conclusion

These results highlight the potential of Neoadjuvant vaccination to protect against tumor recurrence and improve patient outcomes, presenting promising opportunities in this clinical application.

KEYWORDS:

Immunotherapy, Neoadjuvant therapy