Airomedical Announces New Research Initiative: Personalized Dendritic-Cell Vaccine Therapy for Breast Cancer

New data confirm the safety and immune benefit of dendritic-cell vaccines in breast cancer; Airomedical helps patients reach leading clinics.

UNITED KINGDOM, September 29, 2025 /EINPresswire.com/ -- Cancer treatment is increasingly moving toward personalization. Among the leading strategies is dendritic-cell (DC) vaccine therapy — an immunotherapy which aims to harness the body's own antigen-presenting cells to mount a targeted immune attack on tumour cells. For advanced breast cancer patients, especially when standard treatments are exhausted or only partially effective, DC vaccines offer hope. Below, we review what recent studies have shown, what strengths and limitations remain, and how tools like Airomedical help patients access these cutting-edge options.

> Personalized immunotherapy is no longer experimental: German studies prove its measurable benefits."
>
> *Dr. rer. nat. Thomas Nesselhut, PhD*

What are dendritic-cell vaccines, and why do they matter

Dendritic cells are potent antigen-presenting cells that help initiate both innate and adaptive immune responses. In DC vaccine approaches, patients' dendritic cells (often derived from monocytes) are "loaded" with tumor antigens (which may be HER2, neoantigens, or other tumor-associated proteins), matured, and reinfused, sometimes in combination with chemotherapy, checkpoint inhibitors, or other immune modulators. The goal is to generate stronger tumour-specific T cell responses, as well as possibly humoral (antibody) responses, to reduce tumour burden, delay progression, or improve response to other therapies.

In breast cancer - especially subtypes such as HER2-positive, triple negative (TNBC) or metastasized, or when PD-L1 status is variable - DC vaccine strategies are being investigated

because they may help overcome resistance, reduce recurrence risk, and increase response when combined with standard therapies.

Key recent clinical studies: what the evidence shows

DC Vaccine plus Neoadjuvant Chemotherapy in Early HER2-negative Breast Cancer

A study (Santisteban et al., 2021) randomized 39 patients to DCV + neoadjuvant chemotherapy (NAC) and compared them with 44 controls receiving NAC alone. All were early, HER2-negative breast cancer patients. The study found a pathological complete response (pCR) rate of 28.9% in the vaccinated group vs 9.09% in the control group ($p = 0.03$). Mentioned in SageJournals.

DC Vaccine in Locally Advanced Triple Negative Breast Cancer (TNBC)

Another German trial (through IOZK, Cologne) evaluated the safety and initial efficacy of an autologous DC vaccine plus preoperative chemotherapy in locally advanced TNBC. Vaccine administration was both pre- and post-surgery (7 total doses in some patients). Reported by ASCO. Among 10 patients, 5 out of 10 achieved pathologic complete response (pCR) at surgery (breast + axilla).

HER2-Targeted DC Vaccines, Clinical Benefit in Metastatic / Relapsed Disease

A Phase I study (AdHER2 DC vaccine, NCT01730118) enrolled 33 patients with HER2-expressing metastatic cancers (including breast cancer, among others) who had progressed after standard anti-HER2 therapy. As per Frontiers Oncology. Key finding: Of 21 evaluable patients, 7 (33.3%) showed clinical benefit: 1 complete response, 1 partial response, and 5 with stable disease.

Broad Reviews and Meta-analyses

A systematic review of cancer vaccines in advanced breast cancer (2025), SpringerLink examined various studies of vaccines, including DC-based ones:

Among 26 patients in specific trials, stable disease (SD) was observed in 16.7%, with a median duration of response of ~105.5 days (95% CI 79-197 days).

In breast cancer vaccine trials using DCs, while objective response rates (CR + PR) remain low, disease stabilisation constitutes a meaningful result, especially when accompanied by good tolerability.

This suggests that in advanced disease, DC vaccines more often yield disease stabilization rather than significant tumor shrinkage; however, stability — especially over months — can translate to a better quality of life and potentially prolong the utility of other treatments.

Personalized immunotherapy using dendritic-cell vaccines holds real promise for advanced breast cancer patients. Recent trials have shown improved pathologic responses, measurable immune activation, and safety with low toxicity. However, consistent evidence for long-term survival benefit is still emerging, and responses vary by cancer subtype and patient characteristics. For patients considering advanced immunotherapy, using resources like Airomedical to identify centres, understand published outcomes, and plan treatment logistics can make a crucial difference. As more trials mature, it is likely that DC vaccine therapies will assume a more established role, either as adjuncts to other immunotherapies or as part of personalized combinational strategies.

Studies mentioned:
1) https://link.springer.com/article/10.1007/s12282-025-01751-1
2) https://journals.sagepub.com/doi/full/10.1177/17588359211064653
3) https://pubmed.ncbi.nlm.nih.gov/34976830/
4) https://pubmed.ncbi.nlm.nih.gov/34987618/

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