Optimizing Scalp Cooling Efficacy in Breast Cancer: A Single-Institution Experience and Review Highlighting Team-Based Care and Regimen-Specific Protocol Refinements

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Background & Objective

- Chemotherapy-induced alopecia (CIA) significantly impacts quality of life.
- Scalp Cooling Therapy (SCT) is effective, but efficacy varies by care quality and regimen.
- The "Asian Fit" Challenge: Scalp cooling efficacy varies by head shape and hair characteristics. In Asian populations, fitting issues and hair thickness often compromise cooling contact, necessitating a more hands-on, technique-intensive approach
- The Workload Barrier: In standard care, nurses often bear the sole responsibility for fitting, leading to workload burden and inconsistent cooling quality.
- Hypothesis: We hypothesized that a dual strategy—optimizing the human factor (Team-Based Care) and the biological factor (Regimen Sequencing)—would establish a new standard of efficacy.
- Objective: To evaluate the impact of a Refined Team-Based Approach and Regimen Sequencing on SCT efficacy.

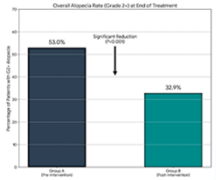
Methods (Refined Team-Based Approach)

- Study Design: Retrospective observational study comparing Pre-intervention (Group A) vs. Post-intervention (Group B).
- Intervention:Enhanced Collaboration: Standardized charting system shared between nurses and hairdressers.Active Integration of Hairdressers: Precise cap fitting, gap reduction, and psychosocial support.

Results 1: Impact of Team-Based Care

- Comparison: Group A (n=66) vs. Group B (n=79).
- Key Finding: The refined approach significantly reduced alopecia rates across various regimens.

Data corresponds to the manuscript currently under review at Supportive Care in Cancer.



- Significant reduction in Grade 2+ alopecia at the end of treatment: 53.0% (Group A) to 32.9% (Group B) (P<0.001).
- Team maturation successfully reduced the disparity in outcomes across regimens.

Group A (Standard Care)
- ✓Staff: Nurses only (Sole responsibility).
- ✓Protocol: Manufacturer's standard fitting.
- ✓Info Sharing: Standard medical records.

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Group B (Refined Team Approach)
- ✓Staff: Multidisciplinary Team (Nurses + Certified Hairdressers).
- ✓Technical: Precise cap fitting & gap reduction by hairdressers.
- ✓Info Sharing: Specialized Charting System (Hair/Scalp/Cranial morphology).
- ✓Support: Practical hair care advice & psychosocial support.

Discussion & Conclusions

Mechanism of Sequencing (Why wPTX first?):
- ✓ Anthracyclines (ddAC): Cause rapid, potent anagen effluvium (direct toxicity to matrix cells). Initial exposure may overwhelm cooling protection.
- ✓ Taxanes (wPTX): Induce toxicity via different mechanisms (microtubule stabilization). Initiating with wPTX may allow follicles to "survive" the initial shock, preserving a critical mass of hair before ddAC exposure.

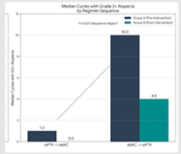
Clinical Implication:
- ✓ Even with optimal supportive care (Group B), regimen sequencing remains a critical independent factor.
- ✓ Recommendation: For eligible patients, sequencing wPTX before ddAC should be considered the preferred standard to maximize hair preservation.

- Optimizing SCT efficacy requires a dual strategy:
  1. High-Quality Team Care: Integration of appearance care professionals (hairdressers) boosts overall outcomes.
  2. Strategic Regimen Sequencing: Initiating with wPTX (vs. ddAC) is superior for hair preservation.
- Combining these strategies offers the new standard in preventing chemotherapy-induced alopecia.

Results 2: Additional Insight (Regimen Sequencing)s

- Focus: Impact of drug administration order (Taxane vs. Anthracycline).
- Comparison: Weekly Paclitaxel first (wPTX → ddAC) vs. Anthracycline first (ddAC → wPTX)

Data from a secondary analysis (Manuscript in preparation)..



- Initiating with wPTX significantly preserves hair compared to the reverse sequence.
- Group A: Median cycles with G2+ alopecia: 1.0 (wPTX first) vs. 10.0 (ddAC first) (P<0.001).
- Group B: Even with better care, sequencing remained significant: 0.0 vs. 4.0 (P<0.001).

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