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SAFETY, EFFICACY AND USABILITY OF THE PAXMAN LIMB CRYOCOMPRESSION SYSTEM FOR PREVENTION OF CHEMOTHERAPY-INDUCED PERIPHERAL NEUROPATHY

INTRODUCTION

• Cryotherapy is a promising intervention for preventing chemotherapy-induced peripheral neuropathy (CIPN). [1]
• Current methods of delivering hypothermia have limited efficacy. [2]

• The Paxman Limb Cryocompression System (PLCS) was developed for use in chemotherapy suites to prevent CIPN (Fig. 1).
• We report the safety, tolerability, efficacy and various usability aspects of the PLCS in delivering cryocompression.

METHOD

• Optimal PLCS parameters were determined in a previous healthy volunteer study [3]
• 15 breast cancer patients receiving weekly paclitaxel chemotherapy underwent concomitant limb cryocompression for 12 weeks (Fig. 2).

• Safety was evaluated with cryotherapy-related adverse events.
• Tolerability was measured using a Visual Analogue Pain Scale.
• Efficacy was evaluated using the EORTC Quality of Life Questionnaire-CIPN20.
• Skin surface temperatures were recorded to evaluate cooling efficiency.
• Usability questionnaires were used to assess design and user experience.

RESULTS

• 14 out of 15 cancer patients completed 12 cycles of cryocompression.
• 1 patient completed 11 cycles due to other medical reasons not related to cryocompression tolerance.
• 83.8% of the cryocompression sessions were maintained at optimal temperature (11°C) or below.
• No core hypothermia or paclitaxel dose reductions due to CIPN.
• Mean difference in CIPN20 sensory neuropathy scores: 1.2
• 2 patients (13%) developed clinically meaningful CIPN (Fig. 3).
• Average skin temperature drop (Fig. 4):
  - 11.53 ± 4.63°C (Arms), 10.80 ± 1.47°C (Legs)

• Feedback on comfort and usability of the PLCS (Fig. 5).

CONCLUSION

• The PLCS delivers safe, tolerable and effective cryocompression to prevent CIPN.
• Feedback from various stakeholders used to improve PLCS design (Fig. 6, 7, 8).
• Continuing to recruit 80 cancer patients in Singapore.
• National Cancer Institute (US) running a three-armed randomized study with 777 cancer patients.