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THE USE OF PHOTOBIMODULATION THERAPY FOR THE PREVENTION OF CHEMOTHERAPY-INDUCED PERIPHERAL NEUROPATHY: PRELIMINARY RESULTS OF A RANDOMIZED, PLACEBO-CONTROLLED TRIAL

Background

Taxanes are well known to cause chemotherapy-induced peripheral neuropathy (CIPN). To date, there are no evidence-based measures to prevent or minimize CIPN. Photobiomodulation therapy (PBMT) is based on the application of (near)-infrared light on target tissue to stimulate cell repair processes and reduce pain and inflammation. The aim of this trial is to evaluate if PBMT can prevent sensory symptoms associated with CIPN and enhance the patients' quality of life (QoL).

Study design

A randomized-control trial with 31 patients with breast cancer that underwent taxane treatment was performed at the Jessa Hospital (Hasselt, Belgium). Patients were randomized to receive PBM or placebo treatments (2x/week) starting at first until the last week of their chemotherapy (CT). The modified Total Neuropathy Score (mTNS) was used to evaluate the severity of CIPN. The patients' QoL was assessed by the Functional Assessment of Cancer Therapy/Gynaecologic Oncology Group NTX scale (FACT/GOG-NTX). A higher score indicates a better QoL. These measures were collected at the first CT session, six weeks after the initiation of CT, and at the final CT session.

Results

Mixed ANOVA revealed a significant difference in the group by time interaction for the FACT/GOG-Ntx total score ($p=0.031$) with a higher overall score in the PBMT group. Specific questions of the FACT/GOG-Ntx regarding numbness in hands and feet were analyzed separately. A significant increase in the severity of numbness in hands and feet over time was observed in the control group ($ps=0.000$), whereas it remained constant in the PBMT group ($ps=0.072$). However, no significant difference was observed in the mTNS between both groups.

Conclusion

Based on preliminary results, PBMT seems to reduce the development of CIPN resulting in a better QoL. These results must be interpreted with caution because of the limited sample size. Further research in a larger patient population is necessary.