

How can an optimal photobiomodulation ecosystem be established in a hospital setting to enhance supportive care ?

Poster number : 2825

Antoine Lemaire, Hélène Dewaele, Gwladys Fontaine, Béatrice Louvet, Karima Mezaib, Halima Abahssain, José Rodriguez, Aurélie Joye, Lidvine Godaert

Oncology & Medical Specialties dpt. Valenciennes General Hospital, France

Photobiomodulation (PBM) in Supportive Care in Cancer

- PBM is internationally recommended for various supportive oncological care indications, including guidelines by WALT & MASCC
- To efficiently implement PBM in hospital settings, it is crucial to establish a comprehensive ecosystem that encompasses various dimensions

Why PBM in Supportive Care? Clinical Aspects

- When used professionally, PBM has no side effects or interactions
- It allows for treatment optimization by avoiding potentially harmful medications and reducing the need for drugs such as painkillers
- PBM can reverse the mechanisms responsible for symptoms (e.g. chemotherapy neurotoxicity) and prevent them (e.g. mucositis, radiodermatitis), treating symptoms that medications cannot address (e.g., chemobrain, dysgeusia, voice changes)
- PBM can accelerate recovery and treat pain simultaneously

Why PBM in Supportive Care? Global Aspects

- PBM is a valuable tool that can be used at every stage of cancer treatment, including prevention, curative care, and palliative care
- It is probably one of the most effective technologies for addressing the side effects of cancer treatments
- PBM is a multimodal approach on its own that is supported by scientific evidence, including publications, guidelines, and standardized dosimetry/protocols
- In addition, it is cost-effective when considering the overall cost of cancer care and the potential cost of avoidable side effects or complications, or the cost of non-quality

Photobiomodulation in supportive care : pain as a major symptom to manage

WALT 2022 and MASCC/ISOO 2020 recommendations for PBM treatments in prevention and/or management of cancer therapy-related complications		Therapeutic prospects to the use of photobiomodulation in supportive care
Oral mucositis	Pain	Chemotherapy-induced Cognitive Impairment
Acute radiodermatitis	Pain	Anxiety and depression
Lymphoedema	Pain	Opioids addiction
Radiation fibrosis	Pain	Ototoxicity
Palmar-plantar erythrodysesthesia		Cancer-fatigue
Graft versus host disease	Pain	Cancer treatment acne and skin changes
Dysphagia	Pain	Focal neuropathies
Dysgeusia		Myofascial pain syndromes
Xerostomia and hyposalivation	Pain	Visceral pain
Osteonecrosis and musocal necrosis	Pain	Musculoskeletal pain syndromes
Voice and/or speech alterations		Tendinitis
Chemotherapy-induced peripheral neuropathy	Pain	Complex multimorphic pain syndromes requiring central and peripheral neuromodulation
Chemotherapy-induced alopecia		Wound healing
Periodontal lesions after chemotherapy and radiotherapy	Pain	Erectile dysfunction
Trismus	Pain	Vaginal dryness
		Radiation cystitis
		Xerophthalmia

Take away message

- Implementing PBM in supportive oncology care and creating an ecosystem to sustain this activity requires consideration of various parameters
- This allows the right patients to access PBM at the right time, with the right equipment and protocols

Challenges In hospital settings

First Challenge : Medical

- We need to determine the place of photobiomodulation in the patient journey, including selecting the types of symptoms to be treated with PBM based on various parameters such as the nature of the hospital's activity, available equipment, and therapeutic objectives (preventive and/or curative)
- It's also important to know when to incorporate PBM into regular therapeutic strategies and emphasize the importance of clinical patient assessment throughout the journey

Second Challenge : Technical

Selecting the appropriate PBM equipment depends on :

- the current and future medical projects,
- medical indications to be treated,
- the staff performing PBM sessions,
- the technical and ergonomic quality of the devices

Third Challenge : Organization

- Ensure that PBM is visible within the hospital and the oncology department through effective communication
- Highlight the importance of a medical "filter" to rigorously establish the indications and modalities of PBM after clinical evaluation and symptom screening
- Secure computerized, personalized medical prescriptions for PBM sessions
- Ensure that the nursing staff is trained and expert in PBM
- Advocate for a dedicated space or even a real PBM unit within the supportive care department
- Integrate PBM for research and teaching purposes

Fourth Challenge: Developing a Well-Balanced Business Model

- Establishing a sustainable business model, in the long run, to sustain PBM operations and recover equipment expenses
- The business model might differ from one country to another based on financial support, healthcare frameworks (reimbursement?), health insurance, and the nature of hospital operations (public or private)

1. Robiins J, Nair RG, Lodewijckx J, Arany P, Barasch A, Bjordal JM, Bossi P, Chilles A, Corby PM, Epstein JB, Elad S, Fekrazad R, Fregnani ER, Genot M-T, Ibarra AMC, HamblinMR, Heiskanen V, Hu K, Klastersky J, Lalla R, Latifian S, Maiya A, Mebis J, Migliorati CA, Milstein DMJ, Murphy B, Raber-Durlacher JE, Roseboom HJ, Sonis S, Treister N, ZadikY and Bensadoun R-J (2022). Photobiomodulation therapy in management of cancer therapy-induced side effects: WALT position paper 2022. Front. Oncol. 12:927685. doi: 10.3389/fonc.2022.927685

2. Elad S, Cheng KKF, Lalla RV, Yarom N, Hong C, Logan RM, Bowen J, Gibson R, Saunders DP, Zadik Y, Ariyawardana A, Correa ME, Ranna V, Bossi P; Mucositis Guidelines Leadership Group of the Multinational Association of Supportive Care in Cancer and International Society of Oral Oncology (MASCC/ISOO). MASCC/ISOO clinical practice guidelines for the management of mucositis secondary to cancer therapy. Cancer. 2020 Oct 1;126(19):4423-4431. doi: 10.1002/cncr.33100. Epub 2020 Jul 28. Erratum in: Cancer. 2021 Oct 1;127(19):3700. doi: 10.1002/cncr.33549. PMID: 32786044; PMCID: PMC7540329.

3. Behroozian T, Bonomo P, Patel P, Kanee L, Finkelstein S, van den Hurk C, Chow E, Wolf JR; Multinational Association of Supportive Care in Cancer (MASCC) OncodermatologyStudy Group Radiation Dermatitis Guidelines Working Group. Multinational Association of Supportive Care in Cancer (MASCC) clinical practice guidelines for the prevention and management of acute radiation dermatitis: international Delphi consensus-based recommendations. Lancet Oncol. 2023 Apr;24(4):e172-e185. doi: 10.1016/S1470-2045(23)00067-0. PMID: 36990615.