Photobiomodulation in the treatment of pediatric oral mucositis: a feasibility study

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Purpose:

In adults, photobiomodulation is recommended since 2014 for the prevention of oral mucositis induced by head and neck radiotherapy or high dose chemotherapy in the field of HSCT¹. Literature is promising in the pediatric population but level of evidence is weak and recommendations on dosing, frequency and way of application are poor².

We aimed to test the feasibility of using photobiomodulation to treat chemotherapy or radiotherapy induced oral mucositis in a pediatric hemato-oncology unit in routine clinical practice. A secondary objective was to evaluate the effectiveness on pain and grade of mucositis.

Experimental Design:

Children aged from 3 to 18 years, developing an oral mucositis of grade two or more, were included in our study. Low level laser therapy was delivered with Oncolase (Biophoton, St Alban, France) every two days for at least 3 times per mucositis episode and until complete healing. The appliance allowed a combination of red (635 nm) and infra red (815 nm) wavelengths. The fluence was 4J/cm². Extra oral administration was used to treat cheeks and submandibular area, by scanning each area during 50 seconds. The application ended with lips and intra oral areas (palate, tongue) (30 seconds per area of 2cm²). Patient and dental surgeon were wearing light-blocking glasses.

Results: The success of the procedure was of 77% in one year, with the inclusion of 84% of patients (n=22) with oral mucositis of grade 2 or more (WHO). The median age was 8,6 years [3.7-17.2]. We have numbered 146 sessions (median 4 per patient) in 31 mucositis episodes. Tolerance was excellent. The grade of mucositis was not impacted, but we measured a median gain of one point on HEDEN scale and on VAS in the 2 hours following application.

Conclusion: This study concludes to the feasibility of the application of low level therapy every two days until healing of oral mucositis, with an excellent tolerance by children. We also showed a decrease of pain in these children suffering from oral mucositis of grade 2 or more.

References:
