Can photobiomodulation therapy be an alternative to pharmacological therapies in decreasing the progression of skeletal muscle impairments of mdx mice?

Citation

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Abstract

Glucocorticoids are considered gold standard treatment for Duchenne muscular dystrophy (DMD). Moreover, treatment with non-steroidal anti-inflammatory drugs (NSADs) may also have positive effects on management of the muscular symptoms of this disease. However, prolonged use of these drugs leads to development of important adverse effects. In addition, the use of photobiomodulation therapy (PBMT) has demonstrated an important role in delay muscular impairments in disease progression, with protective effect on the skeletal muscle without adverse effects reported. Therefore, we compared the effects of PBMT, glucocorticoids and NSAIDs applied alone or combined in *mdx* mice. The pharmacological treatment was performed with oral drugs (Prednisone and ibuprofen) every day during 14 consecutives weeks. The PBMT was performed using a cluster probe with 9 diodes (1 laser diode of 905 nm, 4 LED diodes of 875 nm, and 4 LED diodes

of 640 nm) on only 1 point on the ventral region of the animal's tibialis anterior muscle. The results showed that glucocorticoids and PBMT improving the functional performance, compared to placebo-control group. However, PBMT was also better than the other groups of treatment. In this way, we believe that the promising and optimistic results about the PBMT in skeletal muscle of *mdx* mice may in the future contribute to this therapy to be considered a safe alternative for patients with DMD in a washout period (between treatment periods with glucocorticoids), allowing them to remain receiving effective and safe treatment in this period, avoiding at this way periods without administration of any treatment.

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