The efficacy of low level laser therapy for chronic neck pain
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Neck pain is common in the general population. It is in the top three of self-reported musculoskeletal pain, next to low back and shoulder pain. About one-third of adults experience neck pain in the course of 1 year, and about 5–10% of adults have a significantly disabling neck problem (Bovim et al., 1994; Cote et al., 1998). Chronic neck pain is costly in terms of treatment, individual suffering, and time lost from work.

Many treatments are available for chronic neck pain, including drugs, electrotherapy, patient education, spinal manipulation, exercises, and behavioral therapy. However, there is typically little evidence to justify their use. It is important to assess the efficacy of widely used chronic neck pain treatments to have a sound basis for management decisions. Local anesthetics, specific exercises, and spinal mobilization or manipulation when used with exercise seem to be beneficial for chronic neck pain (Gross et al., 2004; Kay et al., 2005). But there is no or conflicting evidence for the efficacy of patient education, multidisciplinary biopsychosocial rehabilitation, and electrotherapy (Gross et al., 2000; Karjalainen et al., 2003; Kroeling et al., 2005).

In this issue of PAIN a study of the efficacy of low level laser therapy (LLLT) is reported (Chow et al., 2006). It concerns a light source that generates extremely pure infrared light, of a single wavelength. When applied to the skin, an infrared laser produces no sensation and does not burn the skin. Because of the low absorption, it is hypothesized that the energy can penetrate deeply into the tissues where it is assumed to have a biostimulative effect. The discussion on its putative working mechanism is ongoing. Local anesthetics, specific exercises, and spinal mobilization or manipulation when used with exercise seem to be beneficial for chronic neck pain (Gross et al., 2004; Kay et al., 2005). But there is no or conflicting evidence for the efficacy of patient education, multidisciplinary biopsychosocial rehabilitation, and electrotherapy (Gross et al., 2000; Karjalainen et al., 2003; Kroeling et al., 2005).

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myofascial pain in the neck and found a significant reduction in pain in the active laser group compared with placebo group at the end of the treatment and 1 week after the treatment, but not 10 weeks after the treatment. So maybe the effect of LLLT does not last. For chronic complaints it is long-term efficacy that counts. Moreover, the course of neck pain shows an episodic nature with recurrent exacerbations and periodic flare-ups of pain. Therefore, RCTs should have a follow-up which is sufficiently long to demonstrate sustainability of the treatment effects (Luime et al., 2005).

Another limitation of the RCT of Chow et al. (2006) concerns its external validity. Recruitment concerned advertisements in a local newspaper and posters in waiting rooms. This makes the source population somewhat vague, although the lack of a placebo response in the sham group and the average complaint duration of 15 years suggest that the participants were chronic cases.

The authors note that under-dosing seems to be common and that future RCTs should have sufficient output power and use a laser with an output power at least 3–5 times that of previous RCTs. They found no alarming differences in adverse effects between groups. But of course their study is much too small to detect serious adverse effects, which are typically rare.

A systematic evaluation of the evidence for the efficacy of LLLT on pain reduction is hampered by the multitude of variables involved in these treatments, such as kind of laser device, wavelength, power, energy density, treatment frequency and duration, and method of application. There is a need for standard guidelines for the application of LLLT in chronic neck pain patients particularly regarding duration, frequency, and optimal and minimal dosages. Further randomized controlled trials should address these treatment variables and use large sample sizes and long-term follow-up.

References


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