## Pain Treatment with Laser: A Double Blind Study

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ABSTRACT

Patients with chronic pain out of a surgery specialising on pain-patients underwent treatment with laser for 6 sessions as well as a placebo treatment using the same laser as part of a double blind study. To balance the effects of order of non-irreversible interventions, the order of placebo and laser treatment was randomised. 54 patients were submitted to the complete treatment scheme of which 7 persons were excluded because the initial value of pain intensity was judged to small (less than 40 on the VAS), the remaining 47 patients were evaluated.

The patients were asked to answer a questionnaire three times in the course of the study (before, during and after), in which they had to assess the pain intensity and subjective mood on a 10 cm long Visual Analogue Scale (VAS) which was rated on a scale from 0 to 100. Furthermore we inquired about duration and frequency of pain (using a scale of 1 to 4).

Results:

We used a cross-over design to validate the success of the therapy: For each of the 47 patients we calculated two individual pain values from the initial value to the final value of the treatment (initial value minus final value for each placebo and laser). The value taken during the study was used twice in the calculation; both values were arranged according to the two different treatments. Subsequently we checked the values using a t-test for dependent groups, thus each individual also represented their own control. Significant changes in pain intensity ($p=0.029$) and mood ratings ($p=0.030$) but no significant changes in frequency and duration of the pain were observed. Therefore laser treatment is significantly superior to placebo not only with regard to pain but also with regard to mood ratings. Since relative changes were used in this evaluation which may not conform with strict methodological standards, we sorted the initial values according to the treatment and checked the initial values of each treatment. Using a t-test for dependent data in a second evaluation. We obtained the following results:

1. Pain intensity:

Under laser treatment we found a highly significant (p=0.000) reduction of pain intensity. A slight pain reduction could be observed in placebo patients but it was not significant showing a value of p=0.20.
Expressed in per cent: Compared to the initial value laser treatment reduced pain by 25.4 per cent while placebo treatment reduced pain by 7.6 per cent.

| variable | treatment | before x | before s | after x | after s | p-value |
|---|---|---|---|---|---|---|
| pain intensity | laser | 66.51 | (21.9) | 49.6 | (25.8) | 0.000 |
| | placebo | 57.15 | (23.6) | 52.8 | (28.0) | 0.200 |
| mood | laser | 48.34 | (31.6) | 38.43 | (30.5) | 0.005 |
| | placebo | 41.19 | (31.3) | 37.19 | (31.5) | 0.225 |
| duration | laser | 2.51 | (1.33) | 2.43 | (1.47) | 0.543 |
| | placebo | 2.57 | (1.26) | 2.53 | (1.37) | 0.719 |
| frequency | laser | 1.81 | (0.79) | 1.87 | (0.79) | 0.411 |
| | placebo | 1.72 | (0.62) | 2.02 | (0.89) | 0.012 |

2. Mood:

Mood ratings of patients under laser treatment also improved significantly (p=0.005). Placebo patients again showed a slight improvement at a rate of p=0.225 which is not significant (see table 2). In relation to the initial value the improvement of mood expressed in per cent of the initial value comes up to 20.5 per cent under laser treatment and 9.7 per cent under placebo treatment. As expected there is a close relation between values of pain intensity and mood, with correlations varying from .0.56 to 0.73 at the three stages of measurement.

Discussion:

In comparison to placebo treatment laser treatment leads to a clinically significant reduction of pain and mood of the patient. A change in duration and frequency of pain could not be confirmed by this treatment, probably due to the unsensitivity of the scale for these variables.